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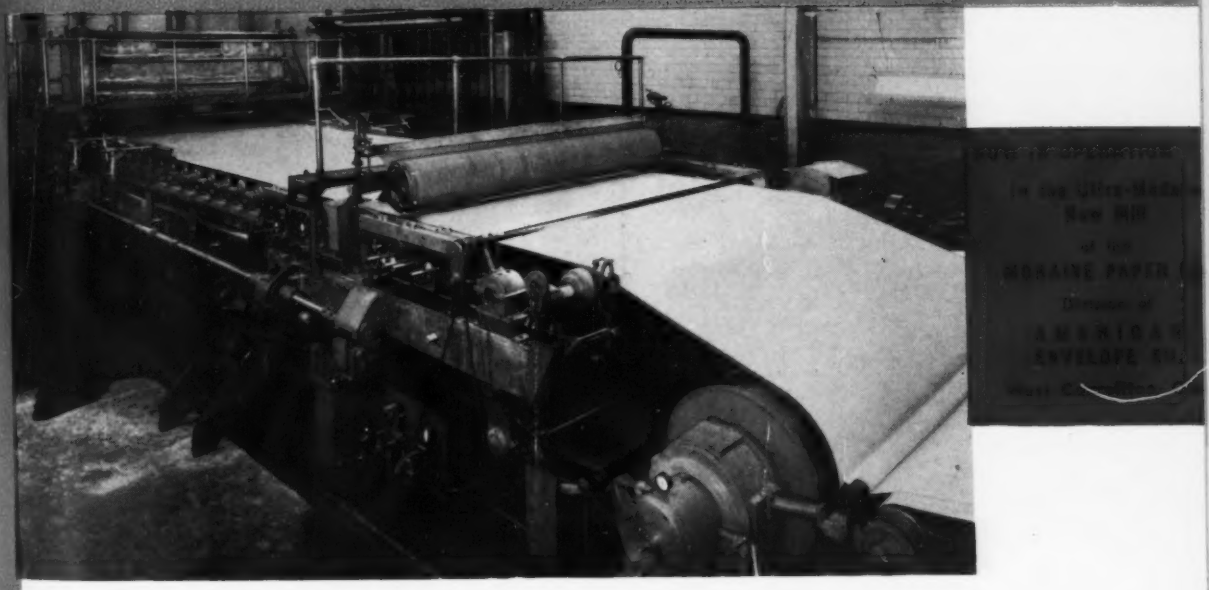
VOLUME 127, No. 14 SEPTEMBER 30, 1948



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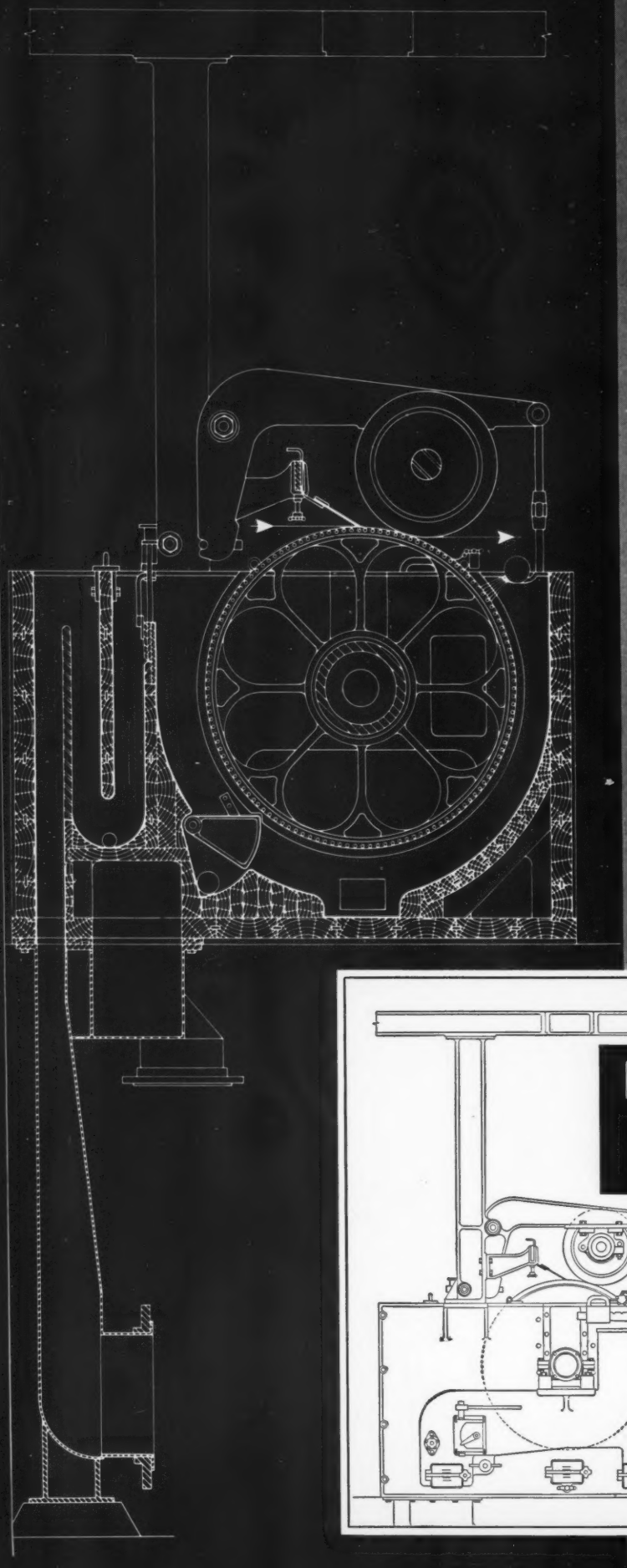

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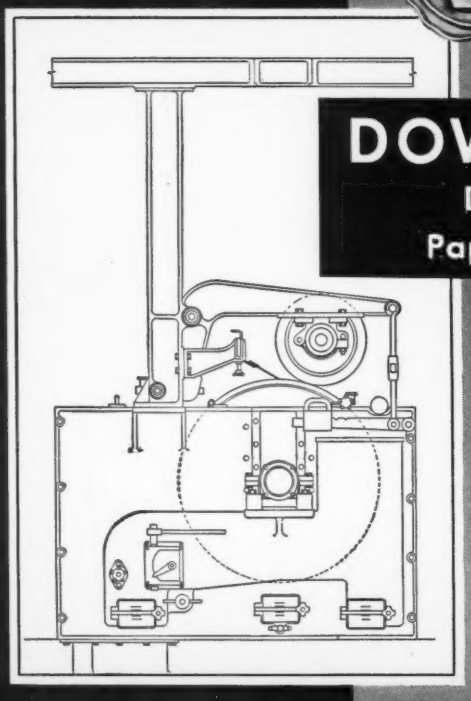

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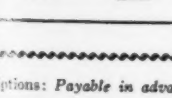

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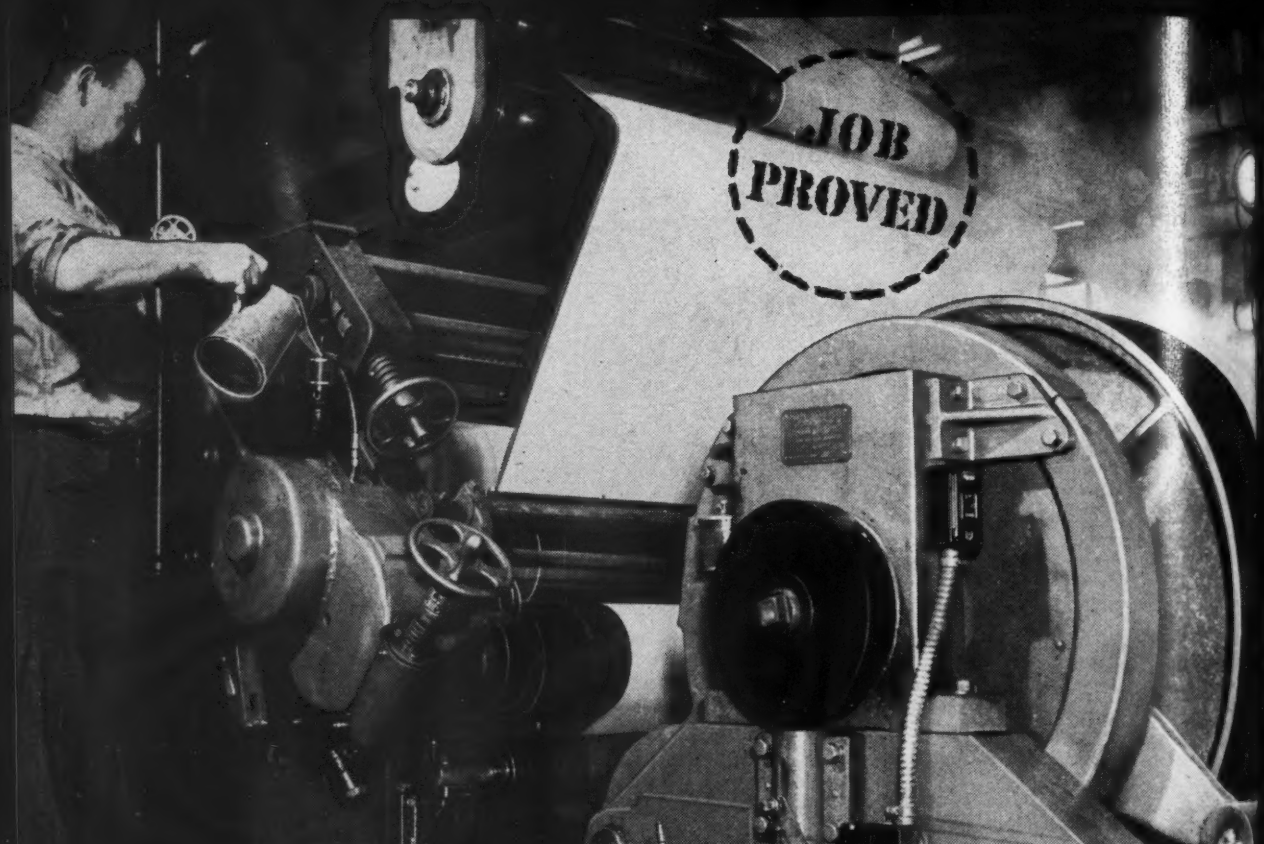

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Paper TRADE JOURNAL
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SEPT. 30, 1948

VOL. 127, NO. 14

Northeastern Wood Utilization Council Conference

CAMBRIDGE, Mass. — About 70 members and guests of the Northeastern Wood Utilization Council met at Massachusetts Institute of Technology on September 17 to discuss the chemistry and utilization of bark.

Walter C. Voss welcomed the guests for the Institute and gave a short talk on conservation.

The meeting was conducted by Robert S. Aries and E. L. Heermance, director and secretary, respectively, of the council. The full text of all papers presented will be published in *Paper Trade Journal* and the Council's *Bulletin* series.

Left, Robert S. Aries. Center, E. L. Heermance. Right, Walter C. Voss

The first paper was written by James C. Rettie in charge of forest economic investigations, Northeastern Forest Experiment Station, Upper Darby, Pa. Mr. Rettie was unable to be present so the material was presented by his colleague, Frederick C. Simmons, logging specialist of the Northeastern Experiment Station.

This paper covered a survey of the amounts of bark available, by species, from various wood using industries.

The second paper, "The Chemistry of Bark," was presented by Arthur Pollak, consultant, New York City, for the author, Erwin Kurth, Oregon State College. It described efforts of research men to break bark down to its individual chemical components. Their results show that bark is composed of lignin, cork, cellulose and miscellaneous extractives such as tannins, sugars, pectins, fats, oils, coloring matter, etc. Bark apparently has some lignin that is similar to wood lignin, but much of the so-called lignin in bark is apparently somewhat different, having two to 15 percent methoxy groups instead of 15-20 percent, as found in wood lignin.

Up to now, research on the chemistry of bark has failed to find a use which will produce a greater return then when used as fuel.

There were two papers on tannin, one of which was prepared by Fred O. Flaherty of the Tanners Research Council and presented by M. Gialla of the A. C. Lawrence Leather Co., Peabody, Mass. The other paper on tannin was prepared and presented by Jerome Rogers of the Eastern Regional Research Laboratory.

Mr. Flaherty's paper described the tannin situation in regard to supply and demand. Apparently the shortage becomes steadily worse and prices continue to rise as the demand slowly increases and the supply of chestnut extract diminishes. When the supply of chestnut becomes exhausted, the shortage of vegetable tannin will be acute unless some replacement source has been found. If this situation arrives we shall be almost completely dependent on sources outside the U.S., for what vegetable tannin we use.

Mr. Jerome covered all known sources of vegetable tannin which may possibly be used to replace chestnut. Apparently there are adequate amounts of vegetable tannin available in hemlock, spruce, fir, oak and maple barks if methods can be worked out for collecting the bark and recovering the tannin. Fir is included in the above list not because of its large tannin content but because it is impractical to keep it separate from spruce in a commercial bark collecting operation.

At the present price of tannin, the smallest profitable extraction plant would require at least 22,000 tons of bark per year. The number of pulpmills or sawmills which produce this amount of bark are limited, but where smaller mills are located close together it might be possible to combine the bark outputs of several mills.

Victor Harwood presented a paper prepared by himself and Clifford D. Purves, of McGill University. The paper was entitled "Research on Bark at McGill University." Mr. Harwood described their methods of extracting bark with various solvents including water, alcohols, ketones, ethers, etc. Some of the extracted materials which they have obtained include resin and fatty acids, waxes and other esters. The fatty acids include linoleic, linolenic and oleic.

A paper on the development in bark

COMING EVENTS:

ASSOCIATION EXECUTIVES: Please send us your meeting dates and locations for this column as far in advance as possible. No charge for publication.

OCTOBER 11-13: TAPPI (U.S.) and Canadian Technical Section. . . Technical Pulping, Poland Springs, Maine.

OCTOBER 11-14: TAPPI Testing Methods Conference at Mellon Institute, Pittsburgh, Pa. Headquarters, William Penn Hotel.

OCTOBER 21-23: Joint Meeting, Southern and Southeastern Superintendents Divisions. Biltmore Hotel, Atlanta, Ga.

OCTOBER 25-28: Third Engineering Conference of the Pulp and Paper Industry. Statler Hotel and Westinghouse Electric Co., Auditorium, Buffalo, N. Y.

PICTURED ABOVE: (1) William C. Van Beckum, (2) W. P. Lawrence (3) Stanley Leaf, (4) F. C. Simmons, (5) H. Schwartz, (6) Jerome Rogers, (7) S. M. Santiago, (8) Victor Harwood, (9) Arthur Pollak, (10) M. Gialla, (11) Benjamin Wolf.

utilization at Weyerhaeuser was presented by William J. Van Beckum of the Weyerhaeuser Timber Co., Longview, Wash. Mr. Van Beckum told of the years of research that were spent in attempting to find uses for the 200 tons of bark which are by-products of the million board feet of lumber produced every day. As a result of this research they are now processing and marketing about 20 tons of bark per day from the veneer plant. After the research phase and before commercial production was started, a pilot plant was operated for two years to work out the kinks. Commercial operation was started in early 1947.

To yield bark in the best form, a new type of debarker, called a compression barker, was developed. This machine consists of a special lathe in which the log is rotated while a horizontally moving roller presses firmly into the bark, producing a spiral compression which strips the bark. The bark is dried, shredded, ground and screened. Ball mills are used to achieve complete separation of fiber from cork.

From this process three basic products are produced and five products are marketed, two being blends. All are sold under the trade name, Silvacon. The three basic products are cork, fiber and powder.

The products, together with their uses, are: *Silvicon 383 — Cork* — used for soil conditioning, mulching, glass builder for plastic molded compounds, flooring; *Silvicon 508 — Fiber* — used in impact molding compositions, magnesite flooring and to add wet strength and water resistance to many plastic compounds; *Silvicon 490 — Powder* — used in insecticide dusts to prevent caking and make free flowing, also used to produce smooth finish in molding compounds; *Silvicon 472 Fine Blend of 383, 508 and 490* used as adhesive extender and for molding compounds; and *Silvicon 412 Coarser Blend of 383, 508 and 490* used in Vinglite and other plastic and ceramic flooring.

All of these products have life and elasticity which is not found in wood flour or other materials which they replace. The selling prices range from $40 to $70 per ton.

"Structural Boards From Bark" was written by L. P. Clermont and H. Schwartz and presented by the latter. The paper describes the research done at Forest Products Laboratories of Canada on the use of bark for insulation board and hard boards. Best results were obtained with Eastern white cedar bark in making low density board. The results with high density board were not very promising, it was stated. None of the boards were as strong as commercial boards made from wood or bagasse, but the low density boards appeared to be strong enough for many uses.

Some interesting characteristics of bark were disclosed by Benjamin Wolf in a paper on "The possible Use of Bark in Soils." Mr. Wolf is manager of Seabrook Farms, which owns 15,000 acres of vegetable farms in Southern New Jersey and has under contract over 25,000 additional acres in New Jersey and Pennsylvania.

Several experiments have been conducted on the use of bark as a soil builder. These tests show definitely that bark, properly applied to the soil, improves its condition by acting as a mulch and allowing better drainage of water into it. However, there are several serious disadvantages as follows: (1) The bark is costly to apply; (2) Large quantities are required; (3) Bark is low in nitrogen and consequently depletes the soil of this element.

These disadvantages might be corrected by adding nitrogen and other chemical to the bark, producing a combination bark and fertilizer. The high cost would then be more justifiable.

Dr. Robert S. Aries, director of the Council, described a method of using bark for de-inking which is practiced by Cartonnerie de Kagsersberg, Kagsersberg, Alsace, France, Ht. Rhin.

The process was developed by Dr. Zundel, chief chemist of the above company. Coniferous bark is used, being dissolved in ten percent caustic at six atmospheres for two hours. The mixture of bark and caustic is then mixed with the paper to be de-inked. Mixing is continued without heat, until the stock is clean. The following proportions are used: Three percent caustic soda and 6.2 percent bark are used on the basis of bone dry paper. The actual consistency is seven percent. Very good results are claimed by the users.

E. L. Heermance, secretary of the Council, outlined a program for possible future research on bark and urged the members present to promote projects along these lines.

Others who were called on to add their views included Paul Koenig of the P. H. Glatfelter Co., W. P. Lawrence of the Champion Paper & Fiber Co., Stanley Leaf of the Allis-Chalmers Mfg. Co. and S. M. Santiago of the Geo. L. Spicer Mfg. Co.

Several manufacturers sent information on equipment suitable for dewatering bark, as follows:

Nekoosa Mfg. Co., Nekoosa, Wis., has a reciprocal bark press, f.o.b. price, less motor, $8,250. No attendant is required, and maintenance cost is nominal. Bark with 80 percent moisture is reduced to approximately 50 percent. They report that the Northwest Paper Co., Cloquet, Minn., with two presses, is recovering $63,000 worth of fuel from its bark.

The Geo. L. Squier Co., Buffalo, N.Y., has an improved bark crusher, which it claims will reduce moisture content to 50 percent, and possibly as lows as 40 percent. The firm writes: "Where bark is to be processed for the extraction of tannic acid, multiple crushers and squeezers can possibly be installed, and, by adding solvents between squeezing operations, appreciable quantities can be recovered during continuous operations and the spent bark passed on to the boilers. The crushers lend themselves to catching the liquids expressed, from which, according to certain industry reports, plasticizers can be extracted."

Stacom Industries, Inc., 29-28 41st avenue, Long Island City, N.Y., is developing a new roller type hydraulic press, known as the Stacomizer, which produces a bark having a uniform moisture content of approximately 40

percent. In the same operation, the bark is comminuted so that burning in air suspension is feasible. Besides preparing waste bark for use as fuel, the equipment has been tested for processing green chips before pulping, production of full length fibres, and extraction of natural fluids. The shredded bark has been used in soil building tests.

The Flash Dryer Division of the Combustion Engineering Co., Chicago, is installing a drying system for the Great Lakes Paper Co., at Fort William, Ont. A report on this is not yet available. The objective is a reduction of the moisture content to about 45 percent.

The New Brunswick International Paper Co., Dalhousie, N.B., has installed two 11′ x 28′ Pehrson rotary louvre dryers (Link-Belt Co., New York) using flue gases. The bark enters by a chute in the center of the dryer and is fed through by influence of internal conical section as dryer rotates. Gases enter by a valve and travel along the channels and up through the bark, being removed by natural draft at the opposite end. The louvres are shaped in such a way that bark cannot enter between them. Capacity of the dryer is 9,000 pounds of bark per hour, dry weight. Moisture reduced from 64.3 percent to 54.5 percent, which, if coal were used, would require the burning of 1,650 pounds per hour.

Cigarette Paper from Fruit Trimmings

TORONTO, Ont.—A new Ontario company to be known as Shaw-Manson, Ltd., proposes to make cigarette paper from fruit tree trimmings.

Investigation into the possibility of making pulp from fruit tree trimmings began in Toronto in 1936. Two years later the Pulp and Paper Research Laboratory in Montreal picked up the idea and manufactured about 1,400 pounds of pulp. The process was patented in several countries by the Pangara Holding Corp., it is understood. Now Shaw-Manson, Ltd., hopes to manufacture in a proposed ten-ton-a-day Ontario pulp plant.

Estimated cost of the mill is $270,000. Cost of necessary land is not expected to exceed $10,000, according to the prospectus offering 25,000 5½ percent cumulative preferred and 4,998 common shares. Shaw-Manson, Ltd., will operate under an exclusive license from the Pangara Holding Corp., for Canada, the United States, Great Britain and France.

Pulp from fruit tree trimmings can be made at a cost of $220 a ton f.o.b. mill, including allowances for royalty, wages and all materials, but not allowing for taxes or depreciation, according to the prospectus. It is intended to sell the pulp for $325 a ton f.o.b. mill. With a production of ten tons a day or 2,750 a year, estimated operating profit would be $228,750 annually.

The mill backers assert that the new type pulp will replace pulp which now costs at least $450 a ton and claim that the pulp will be as good as, or better than, the pulp now used for cigarette paper. The advantage of the fruit tree pulp appears to be that it gives a "milder smoke" when converted into cigarette paper. The claim is that under test, a chemical analysis of the smoke from the burning paper from apple tree and other fruit tree trimmings showed it to give off less acid and aldehyde than other first class cigarette papers burned under the same conditions.

The company proposes to pick up fruit tree trimmings from Ontario orchards. According to estimates of the mill backers, based on Department of Agriculture figures, apple trees in this Province would supply sufficient trimmings for over 40 tons of pulp a day. Other types of trees can supply another 25 tons, if required. Location of the proposed mill is not stated.

The prospectus states; "today, practically all cigarette paper produced on this continent is made of pulp from flax straw. The fruit tree pulp will be sold in Canada, United States, Great Britain and France. It is expected that at first the main market will be in the United States."

Officers of the company are: H. C. Shaw, president; L. D. Shaw, secretary-treasurer, both of Montreal; G. J. Manson, vice-president and managing director, Ottawa; R. G. Shaw, A. A. M. Walsh and A. G. Hellstrom, all of Montreal; and W. H. Boyle, Toronto, directors.

Authorized share capital of the company consists of 25,000 preferred shares, par value $20 each and 50,000 common npv shares. Seven preferred shares and 30,000 common shares have been issued as fully paid up.

It is estimated that $100,000 will be required for working capital and $30,000 for initial expenses. Proceeds to be derived from the sale of the preferred and common stock are $481,115. Estimated net proceeds of the issue, if fully taken up and paid for, should be not less than $450,000.

Messrs. Manson and Shaw, it is stated, promoted the company and assigned to it their interests in an option agreement with the Pangara Holding Corp., covering their right to secure a license from it for the manufacture of chemical pulp under patents held by it, by agreement entered into on March 18. These rights, together with the services, effort, time, etc., of the persons cited were paid for by the issue of 30,000 fully paid common shares, it is stated. Assets of the company consist of the rights under the option agreement, valued at $30,000 and $140 cash in the bank for the seven fully paid preferred shares. Expenses to date amount to $1,211.69.

Labor Peace In Canadian Woods

TORONTO, Ont. — Another year of labor peace in woods operations of the Canadian pulp and paper industry seems assured.

In Vancouver, a Conciliation Board recently unanimously recommended an increase of 13 cents an hour for 40,000 lumber workers. Indications were that the workers would accept it. The union executive already had. Earlier, in Toronto, the AFL Lumber and Sawmill Workers accepted a 10 percent increase on behalf of 30,000 woods workers in Northwestern Ontario.

This year's reasonably fast settlement is being taken by some labor observers as an indication that the growing anti-Communist feeling is having a sobering effect on the Reds. This seemed confirmed by the fact that the B.C. recommendation for a 13-cent raise was concurred in by Harvey Murphy, West Coast Communist labor boss, who was the CIO Woodworkers' representative on the Conciliation Board. The modified Communist tactics seemed to be further confirmed by the swift acceptance of the recommendation by the Communist leadership of the union, particularly since they had been holding out for 35 cents an hour.

Another straw in the wind was seen in the leadership's rebuke of the local's action in sending an insulting telegram to the chairman of the Conciliation Board, Mr. Justice H. Bird. In the past, this has been standard Communist strategy. This time, however, Ernest Dalskog, Communist president of the Woodworkers, quickly apologized. In British Columbia particularly, the changed attitude of the Reds has developed into something of a complete about-face in the space of a few weeks. Now there is speculation that a similar change in the party-line may be in the making on the broader field. The talk is that the Reds, faced with being driven into the open through expulsion or withdrawal of non-Communist unions from the two labor congresses, may be on the point of backing down.

India Industrializing

NEW DELHI, India — The Government of India plans to set up a Central Advisory Council of Industries to assist in securing increased production and to advise on questions relating to industry in accordance with Government resolution on industrial policy, promulgated on April 7.

The council will consist of the representatives of the Central and provincial Governments, industry and labor. The minister of Industry and Supply will be chairman. The paper industry is one among 27 to be represented.

United States Imports and Exports

Pulpwood, Wood Pulp, Paper, Paperboard and Paper Products

June, July and First Seven Months of 1948

United States imports of pulpwood, wood pulp, paper and paper products continue to maintain their high level compared with earlier years although declines in most of the items occurred in July 1948 compared with June, the Department of Commerce announced recently through its Office of International Trade.

The reduction in imports of wood pulp during July can be attributed, in addition to the seasonal factor, to the failure of some importers to take up their options on third-quarter contracts with Scandinavian exporters because of price objections.

Moreover, domestic paper and board mills who purchase pulp from abroad for manufacture in the United States are in a better bargaining position as a result of increased production of wood pulp in this country and increased Canadian production and exports to the United States.

According to statistics compiled by the Bureau of the Census, imports of pulpwood during the first seven months of 1948 totaled 1,183,250 cords. In the similar period of 1947 pulpwood imports totaled 963,520 cords. Canada is practically the sole source of supply of pulpwood.

Imports of wood pulp during the first seven months of this year totaled 1,385,380 tons compared with 1,248,496 tons in 1947. July imports were 183,646

(In short tons except where otherwise indicated)

IMPORTS

Item	July	June	1st Seven Months
Pulpwood, total (in cords of 128 cu. ft.)	256,980	245,884	1,183,250
Rough	144,839	130,579	526,498
Peeled	102,463	107,657	602,473
Rossed	128	73	628
Chipped	9,550	7,575	53,651
Wood pulp, total	183,646	213,200	1,385,380
Bleached sulphite, rayon and special chemical grades	19,240	23,417	141,303
Bleached sulphite, other	29,842	29,073	191,477
Unbleached sulphite	56,706	60,443	442,874
Bleached sulphate	27,214	32,847	172,604
Unbleached sulphate	26,007	30,322	236,472
Soda pulp	2,000	2,542	14,268
Chemical screenings	521	917	5,894
Bleached mechanical groundwood	.....	.....	.....
Unbleached mechanical groundwood	21,795	33,183	177,950
Mechanical groundwood screenings	321	456	2,538
Waste fibrous materials, total	8,925	9,842	60,017
Rags for paper stock	1,568	1,505	14,411
Other pulp—rag, straw, esparto, etc.	.....	.....	.....
Other waste fibrous materials	7,357	8,337	45,606
Paper, paperboard and paper products, total	377,031	390,332	2,579,491
Paper and paperboard, total	376,542	389,796	2,575,790
Paper, total	370,242	383,356	2,530,142
Newsprint	362,174	374,845	2,467,831
Printing, and book paper, uncoated	6,994	6,959	46,837
Fine paper, total	40	51	390
Writing paper	6	9	71
Cover paper	(1)	(1)	1
Bristols	(1)	3	4
Thin paper	27	36	285
Other fine paper	7	3	29
Wrapping, bag, and converting paper total	989	1,383	13,566
Greaseproof	11	1	29
Vegetable parchment	(1)	.....	11
Kraft wrapping	734	561	6,977
Wrapping, except kraft	244	821	6,549
Tissue paper	40	55	1,235
Absorbent paper	2	8	47
Building paper	3	55	236
Paperboard, total	6,300	6,440	45,648
Kraft container board	.....	3	604
Other container and boxboard	.....	.....	25
Other paperboard	3,662	3,258	25,827
Fiber insulation board	167	.....	187
Wallboard	2,471	3,179	19,005
Paper products	489	526	3,701

EXPORTS

Item	July	June	1st Seven Months
Pulpwood (in cords of 128 cu ft.)	27,703	.....	33,037
Wood pulp, total	9,606	10,309	63,317
Bleached sulphite, rayon and special chemical grades	2,666	2,567	10,470
Bleached sulphite, other	490	1,846	13,119
Unbleached sulphite	5,349	3,293	33,412
Bleached sulphate	.....	252	626
Unbleached sulphate	1,058	2,299	4,381
Soda pulp	.....	.....	534
Screenings and other wood pulp	43	52	775
Waste Fibrous materials, total	14,561	14,026	97,164
Overissue news	2,509	2,779	13,176
Other waste paper, including old newspapers	10,004	9,762	72,540
Rags for paper stock; valued at $50 or over per ton	176	263	2,232
Rags for paper stock; valued under $50 per ton	1,151	611	5,711
Other paper stock	721	611	3,505
Paper, paperboard and paper products, total	34,899	34,510	236,139
Paper and paperboard, total	25,620	25,662	173,853
Paper, total	12,996	13,137	100,786
Newsprint	3,492	2,645	17,106
Book paper, uncoated	3,531	3,164	28,460
Fine paper, total	2,922	3,488	28,099
Writing paper	1,889	1,989	17,670
Cover paper	52	148	687
Bristols	437	454	3,782
Cigarette paper	544	897	5,960
Wrapping, bag, and converting paper, total	2,078	1,983	17,793
Greaseproof and waterproof paper	566	751	5,784
Wrapping, except kraft	693	548	6,073
Kraft wrapping	819	684	5,936
Tissue and crepe paper	374	334	3,081
Blotting paper	166	281	1,638
Sheathing and building paper	433	1,242	4,609
Paperboard, total	12,624	12,525	73,067
Kraft container board	5,387	4,072	26,956
Other container and boxboard	508	567	4,356
Other paperboard	3,857	3,829	19,322
Fiber insulation board	1,292	2,051	11,588
Wallboard	1,580	2,006	10,845
Paper products, total	9,279	8,848	62,286
Surface-coated paper	931	1,095	8,869
Toilet paper	609	568	4,355
Paper towels and napkins	203	278	1,241
Filing folders, index cards, and other office forms	219	122	1,194
Papeteries	7	8	45
Wallpaper	4	33	71
Shipping sacks	2,921	1,879	12,346
Paper bags	561	531	3,881
Shipping containers	586	1,064	6,060
Boxes and cartons	413	272	2,973
Envelopes	66	72	559
Cash-register and adding-machine paper	444	207	2,559
Other paper and paper products	2,315	2,719	18,133

(1) Less than one-half ton.

Note: Figures are preliminary; subject to revision.

Source: Prepared in the Forest Products Branch, Office of International Trade.

Data from Bureau of the Census, U. S. Department of Commerce.

tons, a decline of 12 percent from the June figure. July imports from Sweden and Finland were 50 percent and 32 percent, respectively, below those of July 1947. The declines were principally in unbleached sulphite and unbleached sulphate from Sweden and unbleached sulphate from Finland. Wood pulp imports from Canada and Newfoundland, however, were 3 percent higher in July 1948 than a year ago.

During the first seven months of 1948 imports of paper, paperboard and paper products totaled 2,579,491 tons, an increase of 11 percent over the comparable period of last year. Total imports of paper, paperboard and paper products during July amounted to 377,031 tons, of which paper (principally newsprint) represented 370,242 tons; paperboard, 6,300 tons; and paper products, 489 tons. Newsprint imports, in July, amounting to 362,174 tons, were 12,671 tons below those in June 1948 and 9,083 tons above July 1947.

Exports of wood pulp during the first seven months of 1948 amounted to 63,317 tons compared with 70,433 tons during the same period of last year. July 1948 exports were 9,606 tons, 33 percent more than in July a year ago.

The seven months' total for 1948 exports of paper, paperboard, and paper products was 236,139 tons as against 259,545 tons in 1947. Exports of paperboard during the 7-month period registered the only increase, 6½ percent. Total July exports of paper, board, and paper products amounted to 34,899 tons, a slight increase over the previous month, but a decrease of 19 percent from the July 1947 figure.

The accompanying tables, prepared by the Office of International Trade from Bureau of the Census statistics, show exports and imports of all the items for June and July of the 1948 and the first seven months of the year.

INTERNATIONAL'S BOOK PREVIEW

More than 300 persons attended the International Paper Co.'s preview of its Anniversary Book, "International Paper Company After 50 Years," at the galleries of the Associated American Artists, Inc., New York City, September 16 . . . photo shows a general view of the exhibit which depicted techniques and processes used in production of the book.

Ohio Section, TAPPI, Meetings

CHILLICOTHE, Ohio—The first meeting of the Ohio Section of TAPPI for the 1948-49 season will be held on October 12, at Hotel Manchester, Middletown, Ohio. Dinner at 6:45 p.m. and meeting at 7:45 p.m. Bob McCarron, who has charge of arranging the program, announced that the speaker will be Vance P. Edwardes, sulphite superintendent of the International Paper Co., Palmer, N.Y. Mr. Edwardes is also a former president of National TAPPI.

The topic for discussion will be "Let's Talk About Pulp," which is the first in a series of seven. The program committee under the chairmanship of Don Goodman, assisted by G. A. Ireton, Paul Schraffrath, C. R. Merriman and John Redd, have arranged the following program for the 1948-49 season: November 11 — "Let's Let the Converter Talk About His Paper Problems" (a panel discussion); December 14 — "Let's Talk About Statistical Control"; January 15 — "Let's Talk About Our Pet Ideas"; February 15 — "Let's Talk About Calender Stack Finishes"; and March 10 — "Let's Talk About Paper Coating."

All Ohio TAPPI members and friends of TAPPI are most cordially invited to attend these meetings. Make dinner reservations with S. R. Holmes of the Gardner-Richardson Co., Middletown, Ohio, H. A. Smith, recording secretary, Ohio Section of TAPPI, requests.

Fiber Box Meeting

CHICAGO — The annual meeting of the Fibre Box Ass'n. will be held at the Waldorf-Astoria Hotel, New York City, October 12-13.

The annual meeting will open at 2 p.m. on October 12 and will be followed by the board meeting at 4 p.m.. The sessions will conclude at noon, October 13, after a meeting of the members.

H. M. Treen, president of the Fort Wayne Corrugated & Paper Co., is the Association's president and C. W. Trockmorton, Jr., general manager of the Fibre Board Container Co., Richmond, Va., is vice-president.

Paper to Australia

VANCOUVER, B. C. — Approximately 500 tons of newsprint and 400 tons of other paper products were shipped from this port to Australia on the first western sailing of the Aorangi, which has resumed regular passenger and freight service between Vancouver and the Antipodes.

Connecticut Cleaning Up Streams

HARTFORD, Conn.—Connecticut leads other New England states in cleaning up stream pollution, Russell L. Winget, executive secretary of the National Council for Stream Improvement of the Pulp, Paper and Paper Board Industries, told 19 Connecticut paper mill operators who met on September 16 with the State Water Commission at Hotel Bond.

At the mills' request, the National Council will survey the Connecticut paper mills, starting November 1. The survey will be made in cooperation with the State Water Commission. The estimated $10,000 cost will be borne by the Council which is composed of paper mill operators.

The survey's purposes will be to help the mills cut down any loss caused by water-processing paper and to abate stream pollution caused by waste from the mills.

H. E. Brakewood of the National Folding Box Co. presided and was elected chairman of a committee to aid the Council's survey. He estimated that Connecticut's 22 paper mills make about 1,300 tons of paper a day and said the commission approached the problem in "a non-arbitrary, logical and fair and open-minded" manner.

Chemical Expo and Conference

CHICAGO — More than 45,000 representatives of the chemical industry, including technicians, engineers, manufacturers, chemists and executives are expected to attend the fifth National Chemical Exposition and National Industrial Chemical Conference at the Coliseum, October 12-16.

Dr. Charles Allen Thomas, president of the American Chemical Society, will be among the principal speakers, and will lead a discussion on "Frontiers of Chemistry" at the conference.

"In number and diversity of exhibits, the show will be by far the most representative of its kind ever held in America," said Dr. L. E. Clifcorn, chairman of the exposition committee.

The "Trail Blazer" exhibit will supplement the more than 200 industrial displays; the four regional laboratories of the U. S. Department of Agriculture — Northern, Eastern, Southern and Western — are cooperating in the installation of an extensive display, and the Special Libraries Ass'n. has been assigned space in which to show how research libraries contribute to the success and speed of research work.

Special attention will be given those seeking advice on how chemistry may be used in their manufacturing processes. Of interest to small business men and manufacturers will be the "Technical Bureau," to be maintained for the first time at any chemical exposition.

President Thomas, of the American Chemical Society, will be the principal speaker at the Chicago Section show dinner scheduled for 6:30 p.m., October 14, in the Armory at 16th street and Michigan avenue.

A curtain raiser for the show and conference will be a joint luncheon, sponsored by the Illinois Manufacturers Ass'n., the Chicago Ass'n. of Commerce and Industry, and the Chicago Section of the American Chemical Society, scheduled for 12 noon, October 12, at the Sherman Hotel. The show will be open from 12 noon to 10 p.m. daily Tuesday through Friday, and from 10 a.m. to 6 p.m. Saturday.

Howland Testimonial Dinner

BOSTON—To honor Arthur V. Howland, retiring vice-president and assistant treasurer of the Tileston & Hollingsworth Co., who ceased active work with this concern September 1, after 42 years' service, the heads of the company tendered him a testimonial dinner at Hotel Statler September 17.

In attendance were: Amor Hollingsworth, Sr., chairman of the board; Amor Hollingsworth, Jr., president; Eugene H. Clapp, treasurer; Charles H. Cornell, assistant treasurer; George Allen Clapp, vice-president; Howard Wallingford, vice-president in charge of sales, and all of the members of the sales force who were at one time under Mr. Howland's direction. In attendance also were Frank S. McDonnell, general mill manager, and John Ardini, mill superintendent.

Louis B. Howland, comptroller of Forbes- & Wallace, Springfield, Mass., was present to hear the compliments paid his older brother and to witness the presentation of a silver tray which was "suitably inscribed" and contained the autographs of all the guests.

Mr. Howland, although severing his active connection with T & H, remains on the board of directors.

Columbia Places Contracts

VANCOUVER, B. C. — The Columbia Cellulose Co., Ltd., has placed contracts with four British Columbia firms in connection with the 25 million dollar pulp mill which it is erecting at Port Edward near Prince Rupert, B.C. Three contracts have also been placed with eastern Canada and United States companies.

Cement supply contract has been given B. C. Cement Co.., Ltd., Saanich Inlet, Vancouver Island; power wiring, Northern Electric Co. Ltd., 150 Robson street, Vancouver; unit sub-stations, Canadian Westinghouse Co. Ltd., 355 Burrard street; structural and reinforcing steel, Dominion Bridge Co. Ltd., 275 West First avenue, Vancouver.

Water tank, capacity 100,000 gallons, Horton Steel Works Ltd., Fort Erie, Ont.; turbines, Worthington Pump & Machinery Corp., Wellsville, N.Y.; steam generating units, Foster Wheeler Co. Ltd., St. Catharines, Ont.

Plans are being drawn by Stadler, Hurter & Co., consulting engineers, Montreal, and general contract is expected to be ready by September 30.

Seeking Safety Honors

HUGHESVILLE, N. J. — Employes of the Riegel Paper Corp. mill are eligible for the 1947-48 Grand Prize in safety in the paper industry. Recently awarded first place honors among mills of similar size, Riegel employes here extended their perfect safety record beyond the period of the contest to score 342,378 man hours without a lost time accident. The record covers 474 days, from March 18, 1947, to August 4, 1948.

The accident frequency rate at Hughesville was zero for the period of the latest National Safety Council contest, from July 1, 1947, to June 30, 1948.

Kennedy Sales Conference

SHELBYVILLE, Ind. — The Kennedy Car Liner & Bag Co., Inc., held a sales conference in the home office, September 16-18, when sales policies and program were discussed and objectives set which are designed to result in an expansion of the sales activities of the company.

Sales representatives attending were: L. E. Schaeffer and W. J. Hall, New York; W. J. McCollough, Cleveland; B. G. Rich and W. S. Schrock, Detroit; S. J. Kenny, Chicago; G. O. Lorenz, F. D. Scudder, J. J. Smith, F. T. Pence, Shelbyville; R. E. Thornburg who, on October 1 will be transferred from Shelbyville to Chicago as assistant sales manager of that district; and F. A. Coffin, who will replace Mr. Thornburg as sales manager of the Keko Products division, Shelbyville.

W. Va. Veteran Retires

COVINGTON, Va. — Carl J. Rumsey, 83, one of the oldest employes of the West Virginia Pulp & Paper Co., both in years and service, was honored with a testimonial dinner by some 60 of his associates upon his recent retirement after 48 years of service as a machine tender with the firm. Toastmaster at the dinner was Paul B. Lacy, manager of the Covington mill.

Tillman Joins St. Regis

NEW YORK—St. Regis Paper Co., embarking on large-scale production of its packaging system for the commercial shipping of oranges and grapefruit, has named Spurgeon Tillman to its sales staff. Mr. Tillman, for the past three years, has been sales manager of the Pasco Packing Co., Dade City, Fla., said to be the world's largest processor of citrus.

Elected Executive Vice-President

STEVENS POINT, Wis.—George A. Whiting has been elected executive vice-president and A. J. Schierl secretary-treasurer and general manager of the Whiting-Plover Paper Co. Other officers are F. B. Whiting, president, and Thomas Leech, vice-president and sales manager. Directors are the officers and Thomas A. Moore.

Lancaster Tenders Resignation

BERLIN, Conn.—Edward S. Lancaster has resigned as president of the American Paper Goods Co., that firm reported on September 14. The board of directors has delegated "the powers of the presidency" to William S. Bacon, chairman of the board and a former president, the statement said.

Dam Breaks; Competitors Aid

GRAND RAPIDS, Minn. — The dam above the Blandin Mill broke through recently and pulpwood logs above it "are now on their way to New Orleans via Old Miss, and carrying some of the grinders with them." Nearby mills offered machine time and pulp to Blandin in the emergency.

Dam Repair Near Completion

WATERTOWN, N. Y.—Repair of the dam across Black River between the Brownville Board Co. and the Brownville Paper Co., is expected to be completed soon. Mill operations have continued at normal capacity during the repair program.

July Imports and Exports

WASHINGTON — Newsprint imports into the United States declined to 724,000,000 pounds in July from 750,000,000 pounds in June, though above the 706,000,000 pounds imported in July a year ago, the Department of Commerce reported this week.

Imports in July were valued at $33,100,000 compared with $34,800,000 in June.

Woodpulp imports amounted to 184,000 tons in July, compared with 213,000 in June, valued respectively at $23,800,000 and $26,700,000. In July 1947, imports amounted to 226,000 tons, valued at $25,900,000. Woodpulp exports were 9,606 short tons against 10,309.

Exports of paper and paper manufactures dropped to $9,600,000 in July from $9,900,000 in June, and $13,200,000 in July, 1947.

British Straw For Papermaking

LONDON—British farmers were advised in a joint announcement by the Ministry of Agriculture, the Board of Trade, and the Ministry of Food that arrangements in effect for the purchase of straw for paper and board making will be continued for the period of Aug. 1, 1948 to Feb. 28, 1949 through the Papermakers Stray Trading Co., the central buying agency for all mills. Contracts will be placed for straw purchases through recognized straw merchants or traders, who are required to undertake to pay the farmer full price. Price basis is 4 pound sterling per ton of first quality straw, free on rail at farmer's nearest station, packed in compressed bales wire tied. Where wire is not available, compressed bales securely tied with stout string or twine will be accepted.

More Sulfur Dioxide Output

WASHINGTON—Launching of large-scale production of sulfur by two Canadian mining companies, which will make both crude and liquefied sulfur dioxide available for paper and chemical production, is covered in an unofficial report to this country from Ottawa.

Processes will utilize otherwise wasted pyrite ores. Expansion of output may develop a large exportable surplus, it was anticipated. A new plant and other facilities costing $5,000,000 will require two years to complete, it was stated.

Masonite Offers Scholarships

CHICAGO—Directors of the Masonite Corp. have established five annual competitive college scholarships, each worth $750 a year, for children of employes in its hardboard plant at Laurel, Miss., as a memorial to William H. Mason, founder of the company.

Eugene Holland, president, in announcing the board's action, said a total of 20 students will receive substantial aid each year after the program has been in effect three years.

Jackson Succeeds Gilmour

VANCOUVER, B. C.—Thomas Jackson, vice-president of Pacific Mills Ltd., was elected vice-president of the B. C. branch of the Canadian Forestry Ass'n. at a recent meeting here. He succeeds John D. Gilmour, who has returned to Ontario to establish a forestry engineering practice at Toronto.

New York Mills Featured

ALBANY, N. Y.—"Paper: Multi-Purpose Product" is the title of a feature article in the September issue of the *Industrial Bulletin* published by the New York State Department of Labor. The story deals with the 32 paper mills in the Albany district which employ some 10,000 persons.

Sees Big Forest Products Future

CAMBRIDGE, Mass.—"Business Organization for Effective Use of Forest Products" is the title of a feature article by W. Arnold Hosmer in the September *Harvard Business Review*.

Rebuilding Boosts Production

BOSTON—The No. 3 Machine at the plant of the Tileston & Hollingsworth Co. at Hyde Park, which has been under repair for about five weeks and built completely over, is now accomplishing ten percent greater production than previously.

Lily-Tulip Sales Climb

BOSTON — Sales of Lily-Tulip Cup Corp. for 1948 are showing an increase over last year and the company's outlook is favorable, F. K. Doscher, vice-president, here to address the Sales Managers Club of the Boston Chamber of Commerce said on September 18. Sales last year were $2.5 million.

Robertson Outing

MONTVILLE, Conn. — The 13th summer outing of the Robertson Paper Box Co. held at Camp Wakenah, Gardner Lake, September 11, attracted 400 employes and friends.

Costa Rican Market Grows

SAN JOSE, C. R.—Increased Costa Rican literacy and greater education programs are evident in the heightened demand for printing and writing papers. Establishment of the University of Costa Rica in 1940 also the opening of numerous official and private schools since that date have been instrumental in awakening greater interest in reading throughout the country. Enactment of labor laws has caused a keener interest among the working classes in matters related to their trades, with the result that many periodicals on specialized subjects, trades or professions are being published. This trend has created a demand for newsprint and printing papers, particularly the type required for magazines.

Paper and paper product consumption in Costa Rica has shown a steady upward trend since the war's end. Greatest increases are said to be in newsprint and bond printing papers, followed by toilet and other tissues, paperboard and laminated paper. New periodicals, including a leading daily already enjoying wide circulation, plus a tendency to expand established publications, account for increased consumption of newsprint. Printing paper in larger quantities is required as a result of modernization of business methods which demand more complete records and forms.

Better packing and presentation of merchandise has resulted in increased use of greaseproof paper and cellophane, replacing cheaper grades of paper formerly acceptable to customers particularly in the meat, dairy, and other food-products industries. Exports of domestic chocolates and other candies have created greater demand for suitable packing paper and boxes. Added consumption of cigarette paper, glassine paper and cellophane also have come with increased cigarette output.

In the absence of domestic production, Costa Rica relies on imports of paper and paperboard to meet production needs. Leading importers and exporters' representatives agree that the quality of U. S. paper products compares favorably with similar commodities from other countries. It is their opinion that the U. S. will continue to lead in the market while current transportation and production difficulties prevail in European manufacturing centers. Scandinavian countries will attempt to regain their share of certain Costa Rican paper purchases by virtue of their long relations with local importers and offerings of lower quotations, it is anticipated, particularly on newsprint and wrapping papers. Other paper products such as printing papers, tissues, writing papers and paperboard will, it is believed, come from the U.S.

Two grievances in connections with U. S. shipments have been expressed. First is careless packing which results in damage of 10 to 15 percent. Importers suggest adoption of the European packing method consisting of two crate boards placed one on top and the other beneath the bale and fastened by means of iron clasps. Second complaint is the delay in dispatching orders, in some cases as long as tw years, with con sequent loss of prestige and reputation to the U. S. exporter. It is the opinion of Costa Rican importers that negligence is part of the explanation.

There is nothing in Costa Rican laws which prevents the opening of branch sales offices, but it seems omer advisable for prospective exporters to appoint local representatives who enjoy the confidence of the trade and are familiar with Costa Rican business methods.

Ebasco to Build Indian Newsprint Mill

NEW YORK — The National Newsprint & Paper Mills, Ltd., Bombay, India, will construct that country's first newsprint mill, it was disclosed here on September 21 by Pran Nath Nair, managing director. Design and construction of the $8,000,000 mill and power plant at Chandni, in Central India, will be directed by Ebasco Services, Inc., a wholly owned subsidiary of Electric Bond & Share Co.

"Newsprint is vital to India's newfound freedom for the publication of more and larger newspapers and other periodicals," Mr. Nair said, and added that domestic manufacture of newsprint will be an aid to conservation of dollar exchange.

The new mill, expected to be in operation by the end of 1949, will have capacity of about 100 tons a day and is expected to meet most of the present import volume at a price about one-third the import price. Mr. Nair placed total demand at 90,000 tons a year.

In addition to the newsprint mill, Mr. Nair disclosed, his company contemplates eventually building "the world's largest" paper mill, where the output will include kraft, cigarette and other papers.

The immediate development includes a mill costing about $5,000,000 and a steam electric generating plant to cost $3,000,000. Westinghouse Electric International Co. has been cooperating on the project. Total expenditures for the combined plant in the United States will be about $3,000,000, Mr. Nair said.

Government Backs Project

The project is being underwritten by the government of the Central provinces, which is buying the power plant. The sponsoring company has initially issued stock of $4,500,000 and total authorized stock of $15,000,000. While the government has underwritten the issue, it does not control the company and much of the stock has been purchased by individuals, Mr. Nair said.

Site of the mill is on the Bombay-Delhi road, about 325 miles northeast of Bombay, in the center of 11,000 square miles of forest. Using deciduous trees for the first time in making newsprint, the mill will process bamboo and salai trees. Research for the process was done at the Pulp and Paper Institute of Canada. Both trees are fast growing; four years for bamboo and six to ten years for salai, and supplies available are great, Mr. Nair said.

Experiments also are well advanced on the use of the paper mulberry, a tree employed many years ago by the Chinese for paper making, which will be grown for the company's use.

Left to right: T. C. Westcott, A. P. Schnyder, F. C. Gardner and A. C. Harwick, staff members of Ebasco Services Inc., who will supervise construction of India's first newsprint mill.

By-Product Uses Pictured

PORTLAND, Ore. — Speaking at the 114th national meeting of the American Chemical Society on September 17, Dr. Irving A. Pearl of the Institute of Paper Chemistry, Appleton, Wis., said:

"The various wood-using industries have in their hands the raw materials for the production and the synthesis of a great number of pure organic chemicals useful in all walks of life. Many of these products are wasted at the present time, but fundamental research in these fields is uncovering new products and novel uses for the by-products of the wood-using industries."

An "enormous" potential source of chemicals is the sulfite waste liquor of the sulfite pulp industry, Dr. Pearl told his audience, adding that conidendrin is a by-product of this industry which has attracted much interest and which can be isolated in relatively pure form by simple solvent extractions of western hemlock sulfite waste liquor.

"Although present in only low concentration in the liquor, the average Pacific Northwest sulfite mill is sewering several tons daily of an easily isolatable, potentially valuable chemical compound use-potent antioxidant for fats and oil which would command a premium price," Dr. Pearl asserted.

The chief organic components of sulphite waste liquor are lignin and sugar, he pointed out. Research has demonstrated that commercial production of sugars for whisky fermentation by hydrolysis is feasible, he declared, adding that a plant was built and operated on a trial basis last year.

"The opinion has been expressed that, with some modification in the layout of the piping systems," Dr. Pearl said, "the plant could operate efficiently and profitably under present market conditions for ethyl alcohol and that prices of the other carbohydrate sources, such as blackstrap molasses, would have to drop to values approaching those of the prewar depression to endanger the use of wood sugars for chemical production.

"Sulfite mills are left with millions of tons of waste lignin each year, and at present this tremendous tonnage is discharged into streams and waterways," he said.

Pran Nath Nair right, managing director of National Newsprint & Paper Mills Ltd., with Mrs. Nair and T. C. Wescott, president of Ebasco Services Inc., discuss plans for construction of India's first newsprint mill.

Interesting facts about PAPER

Paperboard hat boxes were sought-after luxuries back in the 19th Century, and the "box peddler" was a well-known figure on city streets. The boxes were handmade and many were sturdy enough to be used as traveling cases.

INTERESTING FACTS ABOUT CALCOTONE PASTES

The new CALCOTONE* PIGMENT PASTES are adapted to beater dyeing and produce shades of good fastness to light and bleeding. Being pigment dispersions, they develop full color rapidly in the beater. No grinding is necessary.

Because of their extremely fine particle size and their compatibility with casein, starch, natural and synthetic latex, CALCOTONE PIGMENT PASTES are suitable for surface coating, wall paper printing, and saturating work.

Ask your Calco Representative for full information about Calco's wide range of colors for paper.

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Trends

Office of the PAPER TRADE JOURNAL,
Wednesday, September 29, 1948.

Wood Pulp

The critical situation which is said to have developed for Finland as a result of the cut in Swedish and Norwegian woodpulp prices brought to New York on September 14, Finland's Walter Grasbeck, managing director of the Finnish Cellulose Ass'n. Since pulp is Finland's principal export, a "drastic drop" in prices is reported to affect the entire economy. Announcement has now been made of the decision to meet competitive Scandinavian prices.

Some local revisions of domestic and Canadian fourth-quarter prices have been made known, others seem likely. Latest reports bring southern kraft prices to $110.00 and $115.00; northern to $125.00 upwards, varying with grades. A price of $112.50 on *southern bag* with freight paid, shows a cut of $17.50 per ton. Complete scale is not yet obtainable. Canadian sources compare quality of Canadian kraft with Scandinavian grades and stress shipping costs, saying that "Swedish unbleached kraft pulp is considered of better grade than some of the lower Canadian grades, but comparable Canadian unbleached kraft is still unobtainable generally at lower prices when freight is taken into consideration. Swedish prices are quoted on dock Atlantic seaboard, whereas Canadian pulp is quoted delivered. The freight feature adds as much as $10 a ton to Swedish quotations.

A noticeable softening of supply of soda pulp is reported. Price is said to be maintained at $130.00 to $135.00.

Summarizing data obtainable from the OIT, the AP&PA reports total imports of wood pulp for January to August, 1948-1947, as follows:

	Short Tons	
	1948	1947
Canada	1,077,723	995,237
Newfoundland & Labrador	5,224	3,964
Mexico	1,054	3,382
Total	1,084,001	1,002,583
Sweden	319,457	400,152
Finland	152,545	135,377
Norway	8.957	5,757
Russia	.....	3,143
Austria	224	.....
Total	471,183	544,439
Grand Total	1,565,184	1,547,022

Book Paper

Glossy Coateds show 50 cents per hundredweight advance in prices of some brands with other advances anticipated. Supply is improved as a result of eased demand. Quality continues to improve. Demand for process-coated papers shows progressive increase.

Newsprint

Statistics released by the NSB for August show Canadian production at 389,148 tons, U.S. at 72,571 tons, Newfoundland at 33,110, making total North American production for August, 1948 494,829 tons. This compares with 480,321 in August of 1947 and tops any August on record. Shipments for Canada were 396,049, the U.S. 71,966, Newfoundland 26,274 tons, totaling 494,289 for August 1948, as compared with 487,568 for 1947's August.

Canadian production showed an increase of 3.1 percent, U. S. output dropped 1.1 percent, Newfoundland lost 0.6 per cent. Net continental increase was 82,784 tons or 2.2 percent more than 1947's period, also greater than in any preceding period.

Stocks on August 31, 1948 were 88,450 tons at Canadian mills, 8,602 tons at U. S., 59,110 at Newfoundland mills, a combined total of 156,162 tons. This compares with 155,622 tons on July 31, 1948 and 156,576, August 31, 1947.

Newsprint stocks on hand and in transit at the end of August were 45 days supply for the average of all daily newspapers reporting to the ANPA, representing an increase of one day's supply over July's total. Daily newspapers reporting to the ANPA consumed 314,045 tons in August, compared with 281,102 tons in August, 1947 and 257,303 in August, 1946. Total estimated newsprint consumption in the U. S. for August, 1948 is reported at 410,516 tons, which includes all kinds of uses of newsprint. For the first eight months of 1948, this was estimated at 3,350,307 tons. During the period, reporting newspapers used 2,562,985 tons, an increase of 13.1 over 1947 and 28.7 over 1946.

British newsprint took another reduction in price effective September 6, the second drop in the price of home-produced newsprint within two months. Latest reduction brings the price to 43 pounds, 15 shillings sterling per ton.

Addressing the Institute of Journalists conference in Edinburgh on September -15, Editor J. Murray Watson of *The Scotsman* and president of the Institute, said that the British Government's plan for a press council with statutory powers and public representation in its membership might become the entering wedge for state control over newspapers. "This," Mr. Watson said, "would be strenuously opposed by the journalistic profession as a whole and, in my opinion, in opposing it they would be acting in the public interest. No government could be safely entrusted with such powers," he added. Members of the Institute called on the Government to permit the use of more newsprint to increase the size of newspapers. W. L. Andrews, editor of the *Yorkshire Post* moved the resolution saying that "there is a danger that the wartime paper famine might be continued by deliberate government policy in ruthless disregard of public needs."

The Bowater Corp. subsidiary, Edward Lloyd, Ltd., Sittingbourne, announced that a newsprint machine which had been shut down as a result of the newsprint situation will resume production on October 4. This will mean that four of the five machines at Kemsley will then be operating. "The improved state of affairs" stated the company, "is due partly to an increase in the manufacturing quota of newsprint in this country and partly to the contract which has been secured by the Bowater Paper Corporation for the export of newsprint to the U. S., the papermaking raw materials for which have been supplied by the U. S. publisher free of dollar costs to this country." The Board of Trade has increased the home quota from 35 percent to 40 percent of the prewar tonnages as of September 6, 1948, the announcement said.

India's first newsprint mill is expected to be in operation before the end of 1949, according to announcement of Managing Director Pran Nath Nair of the National Newsprint and Paper Mills, Ltd., made in New York last week. The mills, with affiliated power plant, will cost $8,000,000 and will process newspaper from bamboo and deciduous salai trees. Contract has been signed with Ebasco Services, Inc., engineering subsidiary of Electric Bond & Share Company, for design and supervision of construction, it was stated.

Indexes

Index of general business activity for the week ended September 18 inclined to 147.1 from 145.6 in the preceding week, compared with 141.4 in the corresponding week of 1947.

Index of paperboard production sloped to 175.8 from 166.1 in the preceding week, compared with 165.9 in the corresponding week of 1947.

Comparative ratios of U. S. paper and paperboard production to mill capacity as reported by AP&PA are shown below:

	Sept. 18 1948	Sept. 11 1948	Sept. 20 1947	Sept. 21 1946	Sept. 22 1947
Paper	**97.5	‡77.4	107.0	105.8	94.3
Paperboard	97.0	76.0	101.0	100.0	93.0

** Indicates 1948 volume of 175,307 tons compared with 169,577 tons in the corresponding week of 1947. ‡ Revised figure.

Paperboard Production (Tons)

	Sept. 18 1948	Sept. 11 1948	Sept. 20 1947
Production	192,334	144,410	181,483
New Orders	173,044	162,353	152,814
Unfilled Orders	386,808	410,240	440,769

Percent of Activity, Current 97%
Percent of Activity, Year to Date 96%

British Pulp Imports

LONDON — Chemical wood pulp imports for the period of January to August, 1948 inclusive totaled 539,915 tons against 402,253 tons in the same period of 1947, an increase of 34 percent. Imports of mechanical pulp were reported at 207,863 tons compared with 177,363 tons for 1947's period, a gain of 17 percent.

For something NEW in paper coatings—try Du Pont DMHF

DIMETHYL HYDANTOIN-FORMALDEHYDE RESIN

Blend it with other adhesive materials . . . try it as a modifier and extender

Here is a water-soluble resin with interesting properties for paper coating compounds. Du Pont DMHF has a low viscosity. It can be readily blended with a number of water-dispersible adhesives commonly used in the paper industry. Aqueous solutions of DMHF are compatible with solutions of various starches and dextrins, proteins such as casein, glue and zein, and synthetic resins such as "Elvanol" polyvinyl alcohol, polymethacrylic acid, sodium carboxymethyl cellulose (Du Pont Sodium CMC) and "Elvacet" polyvinyl acetate. In formulating paper coatings, try Du Pont DMHF as a modifying agent and extender for these materials. For certain applications where films or coatings of increased water-resistance are desired, DMHF can be partially insolubilized by reaction with ammonia, hexamethylene tetramine, ethylene diamine, resorcinol, phenol and urea.

DMHF is now available in commercial quantities and at a new low price! Clip the coupon today for a sample and copy of recently revised technical bulletin which gives much additional information. E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Wilmington 98, Delaware.

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. . . THROUGH CHEMISTRY

PROPERTIES OF DMHF

Color	**Colorless to light yellow**
Odor	**Odorless or faint caramel-like**
Form	**Brittle lumps**
Average Molecular Weight	**240-300**
Initial Softening Point	**60°C. (140°F.), minimum**
Density, g./cc	**1.30**

Free Formaldehyde . . . Approx. 0.3% by analysis by hydroxylamine hydrochloride method in aqueous solution.

Hygroscopicity . . . Absorbs 4-5% moisture in three hours when powdered and exposed to air at 26°C. and 96% relative humidity.

Solubility in Water . . . Dissolves readily in cold and hot water. Solutions are of low viscosity even at high solids content.

pH of 10% Aqueous Solution . . . 4.5-7.0. The pH can be adjusted with hydrochloric and sulfuric acids and sodium hydroxide to any point in the range of 0.5-10 without precipitation.

Solubility in other Solvents . . . Soluble in methanol, ethyl acetate, methyl ethyl ketone, chloroform, methylene chloride, and hot glycerol. Insoluble in benzene, xylene, petroleum ether, diethyl ether, trichloroethylene, and carbon tetrachloride.

Plasticizers . . . Solutions of DMHF containing 5-10% glycerol, 10% triethylene glycol, 10% ethanol formamide, 15% acetamide, 15% urethane, 15% glycerol monoglycolate, 10-20% "Carbowax" compound 1500, or 10-20% methoxy polyethylene glycol 750, based on the resin, deposit non-brittle films on drying that are relatively free from tackiness. Larger quantities of these softeners give tacky compositions. Mixtures of approximately equal parts "Carbowax" compound PF-45 and DMHF give hazy films which are softened without being tacky and are superior in film strength to either component alone.

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Please send ☐ **Sample** ☐ **Technical bulletin No. 26** ☐ **Prices**

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Firm_____

Address_____

Imports

Week Ended September 25

NEW YORK

Newsprint

Madden Reeve Angel & Co., Inc., Mormacpenn, Kotka, 1771 rolls.
Gilman Paper Co., Stockholm, Gothenburg, 147 rolls.
News Syndicate Co., Molda, Rouen, 225 rolls.
Intercontinental Commercial Paper Corp., J. Maersk, Rouen, 1124 rolls.
H. G. Craig Co., G.D.D., Donnacona, 341 rolls.
News Syndicate Co., Ethel Tombs, Gatineau, 275 rolls.
R. A. Olsen, Donpaco, Donnacona, 363 rolls.
News Syndicate Co., Colabee, Baie Comeau, 7486 rolls.
Inte continental Commercial Paper Corp., Norwalk Victory, Antwerp, 213 rolls.
Elmira Star Gazette, Norwalk Victory, Antwerp, 213 rolls.
N. Y. Sun, Tudor Prince, Cornerbrook, 1017 rolls.
Gilman Paper Co., Tudor Prince, Cornerbrook, 184 rolls.
Clinton Paper Corp., Tudor Prince, Cornerbrook, 813 rolls.
N. Y. World Telegram, Tudor Prince, Cornerbrook, 790 rolls.

Raw Paper

Agency Paper Co., Topa Topa, Hamburg, 1 cs.

Parchment Paper

George Lippelgoes, Norwalk Victory, Antwerp, 2 cs.
H. Reich, Norwalk Victory, Antwerp, 1 cs.

Surface Coated Paper

Gevaert Co. of America, Norwalk Victory, Antwerp, 4 cs.

Wrapping Paper

Jay Madden Corp., Mormacpenn, Helsingfors, 131 rolls.
Manufacturers Trust Co., Stockholm, Gothenburg, 79 bls., 98 rolls.

Colored Paper

J. W. Hampton, Jr. & Co., Kahenge, Antwerp, 8 cs., 1 ble., 1 pkge.

Drawing Paper

H. Reeve Angel & Co., Inc., American Ranger, London, 1 cs.
J. E. Bernard & Co., American Ranger, London, 1 cs.
Stevens Nelson Paper Corp., American Ranger, London, 3 cs.
H. Reeve Angel & Co., Inc., Hillcrest Park, London, 5 cs.

Filter Paper

H. Reeve Angel & Co., Inc., American Ranger, London, 11 cs.
H. Reeve Angel & Co., Inc., Hillcrest Park, London, 33 cs.

Wallpaper

F. H. Kaysing (Chicago), American Ranger, London, 582 ctns.
Hudson Shipping Co., American Ranger, London, 8 cs.

Photo Paper

American Express Co., American Ranger, London, 100 drums (base).
American Express Co., Hillcrest Park, London, 123 drums (base).

Abrasive Paper

Durex Abrasives Corp., Marseilles, Naples, 15 bls.

Emery Paper

(———), American Scientist, Havre, 3 cs.
Meadows Wye & Co., American Scientist, Havre, 2 cs.

Cardboard Boxes

Knickerbocker Carriers, N. Amsterdam, Rotterdam, 744 bdls.

Writing Paper

American Express Co., American Scientist, Havre, 2 cs.

Tissue Paper

B. F. Drakenfeld & Co., American Traveler, Liverpool, 2 cs. (gauze stereotype).

Litho Paper

Arnhold & Co., Staghound, Hong Kong, 5 cs.

Uncoated Paper

F. C. Strype, Averdyk, Rotterdam, 30 cs.

U. S. IMPORTS WOODPULP

Preliminary Figures, Aug. 1948

	Country of Origin	Short Tons
Mechanically Ground		
Unbleached	Canada	21,801
	*Newfoundland	11
	Finland	1,452
		23,264
Screenings	Canada	426
Bleached	* No transactions	
Chemical		
Sulphate, Unbleached	Canada	38,655
	Sweden	10,714
	Finland	6,342
		55,711
Screenings	Canada	288
Sulphite, Bleached, Rayon & Spec. Chem. Grades	Canada	18,810
	Newfoundland	1,973
	Sweden	2,742
		23,525
Other	Canada	19,296
	Sweden	3,078
	Finland	542
		22,916
Sulphite, Unbleached	Canada	11,059
	Sweden	9,555
	Finland	7,136
		27,750
Sulphate, Bleached	Canada	18,616
	Sweden	5,053
		23,669
Soda, Bleached & Unbleached	Canada	2,255
Totals:	Canada	131,206
	Sweden	31,142
	Finland	15,472
	Newfoundland	1,984
		179,804

* Being investigated.

Miscellaneous Paper

G. S. Wise, Inc., Stockholm, Gothenburg, 1 cs.
J. E. Bernard & Co., Stockholm, Gothenburg, 70 rolls.

Rags, Bagging, Etc.

Tradesmans National Bank, Taybank, Port Said, 49 bls. old cotton rags.
A. de Vries Trading Corp., Norwalk Victory, 73 bls. scrap bagging.
J. Eisenberg & Son, Agwidale, Havana, 37 bls. cotton waste.
Apex Smelting Co., N. Amsterdam, Rotterdam, 4 bls. paperwaste.
Chase National Bank, American Traveler, Manchester, 7 bls. wool rags.
Midwest Waste Material Co., Vibeke Maersk, Antwerp, 85 bls. scrap bagging, 51 bls. jute waste.
Williamson Northrup Co., Mormacisle, Santos, 45 bls. cotton waste.
Kauders Steuber Co., Dimitri Donskov, Leningrad, 3288 bls. cotton waste, 4302 bls. cotton linters.
Tradesmans National Bank, Dimitri Donskov, Leningrad, 472 bls. cotton waste.
Amtorg Trading Corp., Dimitri Donskov, Leningrad, 186 bls. cotton waste.
Midwest Waste Material Co., J. Maersk, Antwerp, 26 bls. cotton tares, 28 bls. scrap bagging.
E. J. Keller Co., Inc., J. Maersk, Antwerp, 85 bls. jute bagging.
Irving Trust Co., J. Maersk, Antwerp, 59 bls. bagging.
Manufacturers Trust Co., Hillcrest Park, London, 7 bls. rags.
(———), Hillcrest Park, London, 49 bls. canvas cuttings.
Cecil Kutz, Staghound, Shanghai, 200 bls. cotton waste.
New England Waste Co., Staghound, Shanghai, 200 bls. cotton waste.
Chase National Bank, American Builder, Manchester, 10 bls. wool rags, 371 bls. jutewaste.
Leigh Textile Co., American Builder, Manchester, 21 bls. cotton waste.

Casein

P. A. Dunkel, Rio Juramento, Buenos Aires, 500 bags, 55115 lbs.
American Cyanamid Co., Rio Juramento, Buenos Aires, 725 bags, 79980 lbs.
The Borden Co. Chemical Division, Argentina, Buenos Aires, 1000 bags (ground lactic).
American Cyanamid Co., Argentina, Buenos Aires, 500 bags.
The Borden Co. Chemical Division, Mormacisle, Buenos Aires, 300 bags (unground lactic).

Gluestock, Etc.

John Gorvers, Santa Luisa, Puna, 57 bls. gluestock.
Transatlantic Animal Byproducts Corp., J. Maersk, Antwerp, 200 bags boneglue.
Milligan & Higgins, Staghound, Iloilo, 102 bls. hide-cuttings.

BOSTON

States Commercial Co., Norwalk Victory, Antwerp, 18 bls. wool thread waste.
Argo Wool Corp., Norwalk Victory, Antwerp, 15 bls. wool rags.

PHILADELPHIA

Madden Reeve Angel & Co., Inc., Mormacpenn, Helsingfors, 570 rolls newsprint.

BALTIMORE

J. S. Connor, American Ranger, London, 1 cs. printing paper.

NORFOLK

Dixie Jute Bagging Corp., American Traveler, Liverpool, 34 bls. bagging waste.

Prices

Quotations indicate trends in an open market. At the moment they can be of little more value. While some volume business still is done under contract at the figures shown, fluctuations are too varied and frequent to permit prices to be interpreted as representing a wholly stabilized market.

NEW YORK

Paper

(Delivered New York)

Standard News, per ton—

Rolls, contract	$96.00/100.00
Sheets	111.00/ —

Kraft—per cwt.—Carload Quantities Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$9.00/ —
No. 1 Wrapping	7.75/ 8.00
Standard Wrapping Rolls	7.00/ —
Standard Wrapping Sheets	7.50/ —
Standard Bag	6.50/ —

Tissues—Per Ream 24x36 (480) 11 lbs. Zone 1.

Wh. No. 1 Frd.	$1.84/ $2.00
Wh. No. 1 M. G.	1.94/ 2.00
Wh. No. 1½	— / —
Wh. No. 2	1.75/ —
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Shred. Wh. No. 1 per lb.	.12¾/ .18

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	$7.50/$10.00
Bleached	8.75/ 10.00

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15

Manila—per cwt.—C-1 f.a.

No. 1 Jute Tag	$14.50/ —
Reg. Jute Manila	13.25/$15.50
No. 1 Manila Wrapping	9.75/ —
5 lb. Manila	10.75/ 11.25

Boards, per ton—

Filled News	94.00/ —
Plain Chip	90.00/ —
Bkhd. Mla. L-d. Chip*	105.00/ —
White Pat. coated*	120.00/ —
Kraft Liners 42 lb.	105.00/ —
Kraft Corr. .009	110.00/ —
Binders Boards	126.00/ —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—

White, 16 lb.

Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$59.00	$54.55	$52.30
100% Rag	52.25	48.30	46.30
75% Rag	41.50	38.30	36.70
50% Rag	33.75	30.70	29.50
25% Rag	30.25	27.45	26.35

Ledgers, per cwt.

100% Rag Ext. No. 1	$57.00	$52.65	$50.50
100% Rag	50.25	46.40	44.50
75% Rag	41.50	38.30	36.70
50% Rag	33.75	30.70	29.50
25% Rag	30.25	27.45	26.35

Sulphite Bonds and Ledgers—

White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

White Book, per cwt.—

Coated

	Case	Ton
No. 1 Glossy	$20.40	$19.50
No. 2 Glossy	19.15	18.30
No. 3 Glossy	18.40	17.60

Uncoated

No. 1 Antique (Watermarked)	15.90	15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Third Quarter

Domestic mill contract prices delivered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/ $81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/ 135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/ 185.00
Unbleached Sulphate Northern	125.00/ 155.00
Unbleached Sulphate Southern	130.00/ 145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Bleached Sulphate	$160.00/$185.00
Unbleached Sulphate	125.00/ 150.00
Unbleached Sulphite	125.00/ 126.00
Bleached Sulphite	125.00/ 135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Sideruns Pulping News	80.00/ 90.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations

On dock, Atlantic Ports

Bleached Kraft	$185.00/ —
Bleached Sulphite	185.00/ —
Unbleached Sulphite	155.00/ 157.50
Unbleached Kraft	147.50/ —

Finnish Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/ 157.50
Unbleached Sulphate	147.50/ —

Norwegian Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$165.00/$185.00

New Domestic Cotton Cuttings

(F.o.b. Ship. Pt. Plus Dealer's Commission)

White Shirt	$11.00/ $11.50
Unbleached Muslin	11.50/ 12.00
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.50/ 7.00
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.00/ 7.50
Unbleachable Khaki	6.00/ 6.50
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.o.b. Ship. Pt. Plus Dealer's Commission)

	Per 100 lbs.	
No. 1 Whites, Repacked	$5.50/	$6.00
No. 1 Whites Miscellaneous	4.50/	5.00
No. 2 Whites Repacked	3.50/	3.75
No. 2 Whites Miscellaneous	3.00/	3.50
Blue Overalls	3.75/	4.00
Thirds and Blues Repacked	3.25/	3.50
No. 1 Roofing Rags	1.60/	1.70
No. 2 Roofing Rags	1.50/	1.60
No. 3 Jute Bagging	1.40/	1.50
No. 4 Brussels & hrd. bck'd crpts.	1.40/	1.50
No. 5A Roofing Rags	1.40/	1.50

New Foreign Cotton Cuttings

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.	
New Dark Cuttings	$5.50/	$5.75
New Mixed Cuttings	6.25/	6.50
Light Silesias	9.25/	9.50
Light Flannelettes	9.25/	9.50
New White Cuttings	12.00/	13.00
New Unbleached Cuttings	12.25/	13.00
Fancy Shirt Cuttings	6.50/	7.00
Light Prints	7.75/	8.00
Bleachable Khaki, No. 1	7.00/	7.50
Unbl. Khaki, No. 1	6.25/	6.75

Old Foreign Rags

(Prices to Mill, F.o.b. Dock, N. Y.)

	Per 100 lbs.	
No. 1 White Cottons	$8.00/	$10.00
No. 2 White Cottons	7.00/	8.00
No. 3 White Cottons	6.00/	6.50
No. 4 White Cottons	4.00/	4.50
Extra Light Prints	6.50/	7.00
Old Light Prints	4.50/	5.00
Med. Light Prints	4.00/	4.50
Dutch Blue Cottons	5.25/	5.50
Checks and Blues	4.00/	4.25
Linsey Garments	2.30/	2.40
Dark Cottons, European	2.20/	2.30
Dark Cottons, Egyptian	3.20/	3.30
Old Shopperies	2.10/	2.20
New Shopperies	2.15/	2.25

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.	
Foreign Gunny, No. 1	$7.25/	$7.50
Domestic Gunny, No. 1	7.25/	7.50
Heavy Wool Tares	6.50/	6.75
No. 1 Scrap Baggings	6.00/	6.25
Roofing Bagging	1.50/	1.75
Foreign Manila Rope	6.00/	6.25
Domestic Manila Rope	6.25/	6.50
Jute Strings	5.00/	5.25
No. 1 Sisal Strings	5.25/	5.50
Mixed Strings	1.75/	2.50

Waste Paper

Base Prices to Mills for Average Packings F.o.b. New York, Baled

	(Per Ton)	
No. 1 Hard White Envelope Cuts	120.00/	130.00
No. 1 Hd. Wh. Shavings, unruled	110.00/	120.00
Super Soft White Shavings	110.00/	115.00
No. 1 Soft White Shavings	90.00/	100.00
No. 1 Fly Leaf Shavings	45.00/	—
No. 1 Gd'wd Fly Leaf Shavings	35.00/	—
No. 1 Heavy Books & Magazines	19.00/	21.00
Mixed Books	13.00/	15.00
No. 1 White Ledger	70.00/	75.00
Col. Ledger	45.00/	50.00
Manila Tab. Cards	80.00/	85.00
New Manila Envelope Cuttings	90.00/	100.00
Extra Manilas	25.00/	30.00
Mxd. Kraft, Bag Cuttings	60.00/	70.00
Kraft Envelope Cutings	80.00/	90.00
Triple Sorted, No. 1 Brown Soft Kraft	40.00/	45.00
New Kraft Corrugated Cuttings	40.00/	45.00
No. 1 Assorted Old Kraft	40.00/	45.00
New Jute Corrugated Cuttings	18.00/	—
Old Corrugated	14.00/	15.00
No. 1 News	12.00/	13.00
No. 1 Mixed Papers	7.00/	8.00
Box Board Cuttings	7.00/	8.00
White Blank News	65.00/	70.00
Overissue News	16.00/	18.00
Mill Wrappers	14.00/	16.00
Used Kraft Bags	40.00/	45.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)	
Coarse Polished—India	.35½/ .36½
Fine Polished India	.41½/ .45
Unpolished—Paper Makers	.32½/ .34½
Tube Rope	.33¼/ .35½
Wrapping	.36 / .38¾
Cotton	.58 / .60
Polished Cotton	.55 / —
(Hard Fiber)	
Mex. Sisal	.21 / .27
Manila (Reprocessed)	.31 / .35
(American Hemp)	
Polished Hemp	.46½/ .48
Unpolished	.35 / .37¾

PHILADELPHIA

Domestic Rags (New)

(F.o.b. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.10½/ .11
New White No. 2	nominal
Light Silesias	.07½/ .08
Black Silesias, soft	.06 / .06½
New Unbleached	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08
Cottons—According to grade—	
Washable Shredding	.03 / .03½
Fancy Percales	.06¾/ .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.05¾/ .06½
Bleachable Cotton Cuttings	.06½/ .07
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06

Domestic Rags (Old)

(F.o.b. Eastern Shipping Point)

White No. 1—Repacked	4.50 / 5.00
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues—	
Miscellaneous	2.50 / 2.75
Repacked	3.00 / 3.25
Roofing Stock—	
Foreign No. 1	nominal
Domestic No. 1	1.65 / 1.70
Domestic No. 2	1.55 / 1.60
Roofing Bagging	1.45 / 1.50
Old Manila Rope	— / 5.75

(Continued on page 20)

Prices

CONTINUED FROM PAGE 19

Bagging

(F.o.b. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	$5.50 / 6.00
No. 1 Clean Bright—	
Sisal Strings	.04½/ .05
No. 2 Clean Bright—	
Sisal Strings	.03½/ .04
Sisal Jute	.02¼/ .03
Scrap—	
No. 1	5.00 / 5.50
No. 2	2.50 / 3.00

Old Papers

F.o.b. Phila. Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00/$115.00
No. 1 Hard White Shavings, unruled	100.00/ —
Soft White Shavings	80.00/ —
White Blank News	65.00/ 70.00
Soft White Shavings, One Cut	/ 80.00
No. 1 White Ledger	65.00/ 70.00
No. 1 Heavy Books & Magazines	20.00/ 22.00
Overissue Magazines	nominal
New Manila Envelope Cuttings	75.00/ —
No. 1 Assorted Old Kraft	35.00/ 40.00
No. 1 Mixed Paper	7.00/ 8.00
Box Board Cuttings	8.00/ 10.00
Kraft Corrugated Cuttings	75.00/ 80.00
Old Corrugated	14.00/ 16.00
Overissue News	13.00/ 15.00
No. 1 News	10.00/ 12.00

BOSTON

Old Papers

F.o.b. Boston, Mill Prices, Baled

No. 1 Hard White Shavings, unruled	$6.25 /$6.75
No. 1 Hard White Shavings, ruled	6.00 / 6.50
Soft White Shavings, Misc.	6.00 / 6.25
No. 1 Fly Leaf Shavings	— / —
No. 2 Fly Leaf Shavings	4.25 / —
No. 1 Grdwd. Fly Leaf Shvgs.	1.75 / 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50 / 1.75
Mixed Colored Shavings	2.00 / 2.25
New Manila Env. Cuts, one cut	4.50 / 4.75
Hard White Envelope Cuts, one cut	7.00 / —
Triple S'ted No. 1 Br. Soft Kraft	3.75 / 4.00
Mixed Kraft Env. & Bag Cuttings	4.00 / 4.25
Kraft Envelope Cuttings	5.00 / 5.50
No. 1 Heavy Books & Magazines	1.75 / —
New Manila Env. Cutt'gs, one cut	2.35 / —
New Manila Envelope Cuttings	4.00 / 4.25
White Tabulating Cards	5.00 / —
Groundwood Tabulating Cards	1.50 / 1.75
White Blank News	2.25 / 2.50
No. 1 Assorted Old Kraft	3.50 / 4.00
No. 1 Mixed Paper	.47½/ —
Overissue News	.90 / 1.00
No. 1 News	.55 / .60
Box Board Cuttings	.60 / .70
New Corrugated Cuttings, Kraft.	2.75 / 3.00
Old Kraft Corrugated Containers	2.00 / 2.25
Old Corrugated Containers	— / 1.10
Jute Corrugated Cuttings	1.07½/ —
Paper Strings	2.00 / 2.25

Bagging

(F.o.b. Boston)

Gunny Bagging—	
Foreign	(nominal)
Domestic	7.00 / —
No. 1 Old Rope	6.25 / —
Mixed Strings	1.50 / —
Transmission Rope—	
Foreign	nominal
Domestic	3.00 / 3.50
Manila Rope—	
Foreign	nominal
Domestic	6.25 / —
Jute Carpet Threads	6.00 / —
Bleachery Burlap	— / 8.00
Scrap Burlap—	
Foreign	6.50 / 6.75
Domestic	6.50 / 6.75
South America	6.50 / 6.75
Wool Tares	
Foreign	7.50 / —
Domestic	7.50 / —
Austr. Wool Pouches	7.50 / —
New Zealand Wool Pouches	5.00 / —
New Burlap Cuttings	7.00 / —
Heavy Baling Bagging	7.00 / 7.50
Paper Mill Bagging	— / 5.00
No. 1 Roofing Bagging	1.75 / —

Domestic Rags (New)

(F.o.b. Boston)

Shirt Cuttings—	
New Light Prints	.07¼/ —
Fancy Percales	.08 / —
New White No. 1	.11 / .11¼
New Light Flannelettes	.08 / .08½
Canton Flannels, Bleached	.10 / .11
Underwear Cutters, Bleached	.11½/ —
Underwear Cutters, Unbleached	.11 / .12
Silesias No. 1	.08 / .08½
New Black Silesias	.04½/ —
Red Cotton Cuttings	.05¼/ —
Blue Overalls	— / .08½
Soft Unbleached	.11 / .12
Blue Cheviots	.08 / .08½
Fancy	.06 / —
Washable	.06 / —
Khaki Cuttings	.06½/ .07½
Corduroy	.04 / —
Men's Corduroy	.04 / —
Khaki Canvas	— / .06
B. V. D. Cuttings	.11½/ —

Domestic Rags (Old)

(F.o.b. Boston)

White No. 1—	
Repacked	5.00 / 5.50
Miscellaneous	4.50 / 5.00
White No. 2—	
Miscellaneous	2.65 / —
Twos and Blues, Repacked	2.75 / —
Old Blue Overalls	4.00 / 4.50
Thirds and Blues, Repacked	2.20 / —
Miscellaneous	1.80 / —
Black Stockings	3.50 / 4.00
Roofing Stock—	
No. 1	1.70 / —
No. 2	1.60 / —
No. 3	1.50 / —
No. 4	1.50 / —
No. 5, Quality A.	1.60 / —
Quality B.	1.50 / —
Quality C.	.95 / —
Old Manila Rope	6.00 / —

Foreign Rags

(F.o.b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F.o.b. Chicago) Mill Prices, Baled

Shavings—	
No. 1 Hard White Envelope cuts, one cut	$120.00/ —
No. 1 Hard White Shavings, unruled	114.00/ —
No. 1 Soft White Shavings	100.00/ —
No. 1 White Ledger	60.00/ 65.00
No. 1 Heavy Books & Magazines	28.00/ 30.00
White Blank News	55.00/ —
Mixed Kraft Env. & Bag Cuttings	80.00/ —
No. 1 Assorted Old Kraft	25.00/ —
Overissue News	20.00/ —
No. 1 News	— / 16.00
No. 1 Mixed Paper	9.00/ —
Old Corrugated	15.00/ —
Mill Wrappers	11.00/ —

Markets

Blanc Fixe

Supply good; demand steady. Pulp is currently quoted at $85.00 in bags, car lots at works, 6 cents per pound, l.c.l., deld.; by-product $75.00 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Supply adequate. Delivery good. Export improves. Prices range from $4.25 to $4.75 per 100 pound drums, l.c.l. works.

Casein

Demand continues light. Argentine market weak with prices softer as flush season approaches. Domestic prices firm, supply light. Current prices on processed acid precipitated casein at 28½ to 32 cents per pound for domestic grades and 25 to 26 cents for imported grades, f.o.b. shipping point.

Caustic Soda

Liquid types in easier supply. Dry types continue short. Solid caustic is reported at $3.10 per cwt.; flaked and ground is quoted at $3.50 per cwt. in 400 pound drums, $4 to $4.25 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.50 per cwt.; liquid 73 percent in tank cars at $2.60 per cwt.; at works.

China Clay

Demand steady. Supply excellent. Domestic filled clay is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Supply approximately in balance. Southern strike unsettled. Currently quoted at $2.40 per cwt. in single unit tank cars; at $2.70 to $3.90 per cwt., in multi-unit tank cars, f.o.b. works.

Rosin

Prices rising as supply outside loan lessens. Buying improves. Export buying awaits ECA dollars. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah; B, $6.50; G, H, I, K, $7.50. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $5.00; FF, $6.50.

Rosin Size

Heavy demand. Supply good. Seventy percent gum and pale wood grades, tank cars, $6.30 to $6.40, f.o.b. southern shipping point.

Salt Cake

Heavy kraft production keeps demand ahead of supply. Production under contract. Domestic salt cake quoted at $25 to $28.

Soda Ash

Deliveries up to schedule. Production gains shown. Current prices, car lots per 100 pounds; in bulk, $1.15; in paper bags, $1.40; and in barrels, $1.90.

Sodium Bicarbonate

Demand eased by better supply of other alkalis. Production good. Reported as $1.95 per cwt. paper bags, carload lots.

Starch, Corn

Supply good. Demand moderate. Prices steady. Record crop forecast. Pearl grade quoted at $6.66 per 100 pounds; powdered starch at $6.77 to $6.81 per 100 pounds; car lots, New York.

Starch, Potato

Supply ample with heavy crop forecast. Inquiry good. Prices lower. High grade quoted at $5.60 cwt. f.o.b. Idaho, $6.25 f.o.b. Aroostook; Pearl grade $6.10 cwt. f.o.b. Aroostook.

Sulphate of Alumina

Demand increased. Supply steady. The commercial grades are quoted from $1.50 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2.50 per 100 pounds in bags, car lots, at works.

Sulphur

Demand active. Supplies steady. Production shows heavy gain. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

Talc

Prices steady. Demand continues far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

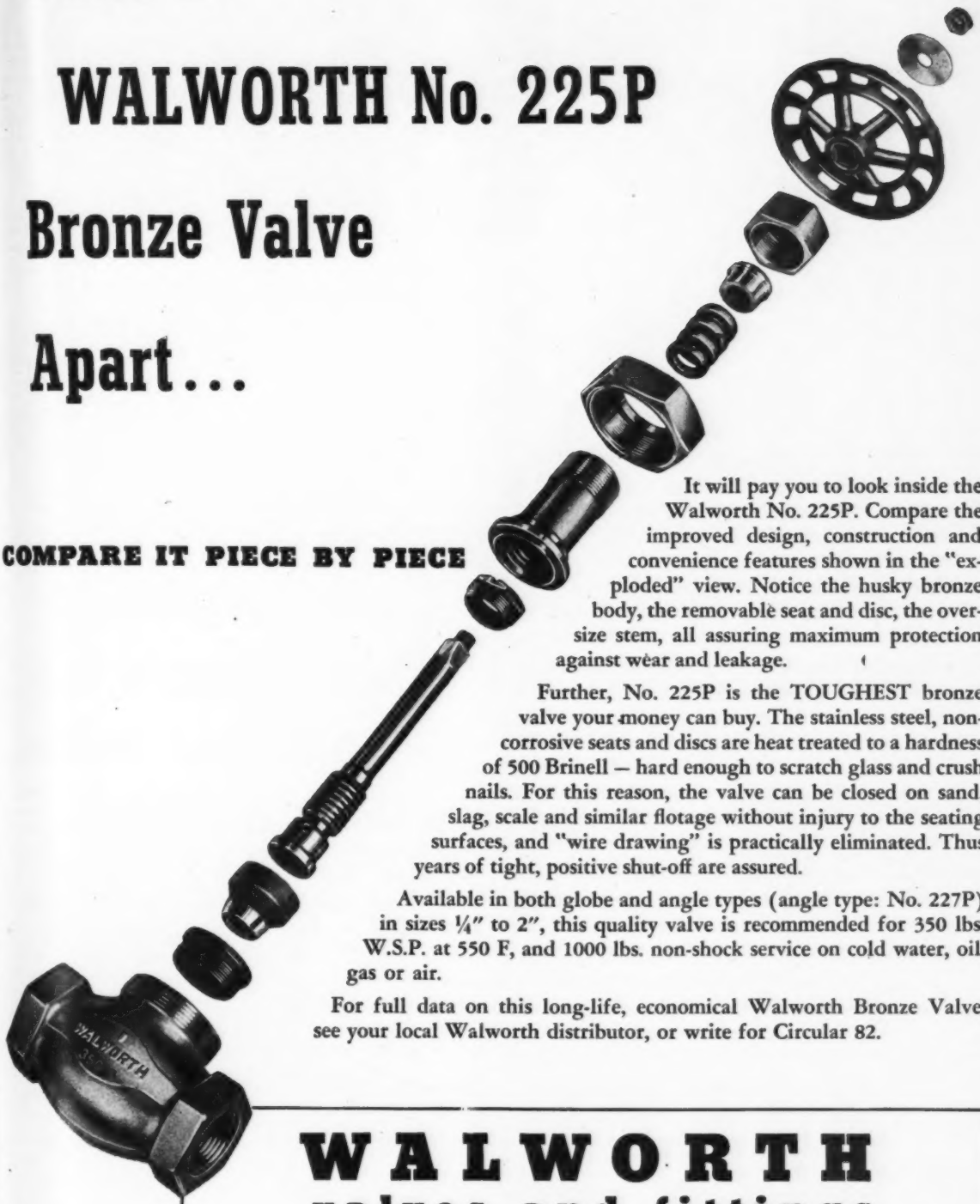
Tapioca Flour

High grades in fair supply and demand. Superior highs range from $10.25/$11.00 cwt.; medium grades $9.25 cwt., on dock Atlantic and Gulf ports; low grades range from $7.25/$7.50 cwt., on dock N. Y. Medium and low grades in adequate supply.

Titanium Dioxide

Supply of paper grades continues unequal to demand. Shipments on allocation. Anastase 18c pound carload lots, 18½-19c l.c.l., rutile, 20c pound carload lots, 20½-21c l.c.l.; 50-pound bags, f.o.b. plant, minimum freight allowance.

Take a WALWORTH No. 225P Bronze Valve Apart...



COMPARE IT PIECE BY PIECE

It will pay you to look inside the Walworth No. 225P. Compare the improved design, construction and convenience features shown in the "exploded" view. Notice the husky bronze body, the removable seat and disc, the oversize stem, all assuring maximum protection against wear and leakage.

Further, No. 225P is the TOUGHEST bronze valve your money can buy. The stainless steel, noncorrosive seats and discs are heat treated to a hardness of 500 Brinell — hard enough to scratch glass and crush nails. For this reason, the valve can be closed on sand, slag, scale and similar flotage without injury to the seating surfaces, and "wire drawing" is practically eliminated. Thus years of tight, positive shut-off are assured.

Available in both globe and angle types (angle type: No. 227P) in sizes ¼" to 2", this quality valve is recommended for 350 lbs. W.S.P. at 550 F, and 1000 lbs. non-shock service on cold water, oil, gas or air.

For full data on this long-life, economical Walworth Bronze Valve, see your local Walworth distributor, or write for Circular 82.

WALWORTH

valves and fittings

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DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Financial Record

Preferred Stocks	Per Share Calendar Year 1947	Earnings 12 Mos. to Approx. 6/30/48	Indic. Annual Divid. Rate	Sept. 22 Closing Market Price
Armstrong Cork Co. $3.75 Cum.	$38.64*	$43.53*	$3.75	92½
Armstrong Cork Co. $4.00 Cum. Conv.	38.64*	43.53*	4.00	110
Celotex Corp. 5% Cum.	24.25c	26.25g	1.00	18⅜
Champion Paper & Fibre $4.50 Cum.	65.90f		4.50	
Container Corp. of Amer. 4% Cum.	102.74	88.25	4.00	
Crown Zellerbach $4.20 Cum.	56.40f	55.07g	4.20	
Crown Zellerbach $4.00 Cum. Conv. 2nd	211.39f	217.70g	4.00	
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	9.16	8.59	2.50	51
Flintkote Co. $4 Cum.	81.91	80.04	4.00	
Robert Gair Co. Inc. 6% Cum.	18.01	16.26	1.20	
International Paper Co. $4 Cum.	236.51	245.85	4.00	
Johns-Manville $3.50 Cum.	128.81	134.48	3.50	
Kimberly Clark Corp. 4½% Cum.	70.03	73.34	4.50	
Kimberly Clark Corp. 4% Cum. Conv. 2nd	95.88	100.73	4.00	97½
MacAndrews & Forbes 6% Cum.	62.20	62.56	6.00	130
Mead Corp. 4¼% Cum.	81.56	79.68	4.25	90
Mead Corp. 4% Cum. Conv. 2nd	53.34	51.75	2.00	36¼
Paraffine Cos. Inc. 4% Cum. Conv.	152.76a		4.00	
Rayonier Inc. $2 Cum.	13.58	15.44	2.00	32½
St. Regis Paper Co. 4.40% 1st A	76.93	84.43	4.40	
Scott Paper Co. $3.40 Cum.	43.95	50.24	3.40	
U. S. Gypsum Co. 7% Cum.	211.34	362.32	7.00	
United Wallpaper Inc. 4% Cum. Conv.	(d)1.35a		2.00	
West Virginia Pulp & Paper 4½% Cum.	75.75c	78.49g	4.50	
Common Stocks				
APW Products Co.	$1.24	$1.46	$0.25	5⅛
American Writing Paper Corp.	1.61	.47	0.25	5⅜
Armstrong Cork Co.	6.41	7.17	2.60	19⅞
Celotex Corp.	6.59c	7.15g	2.00	26½
Certain-Teed Prods. Corp.	3.75	3.92	0.90	14½
Champion Paper & Fibre	5.57f		2.00	
Congoleum Nairn Co.	4.55	5.12	2.00	34
Container Corp. of America	10.09	8.50	2.00e	35½
Crown Zellerbach	6.81f	6.53g	2.00	27¾
Dixie Cup Co.	5.87	5.37	1.00	28⅜
Flintkote Co.	6.27	5.83	2.50	31
Robert Gair Co. Inc.	2.83	2.59	0.40	7⅛
Great Northern Paper Co.	4.56	4.44	2.40	
International Paper Co.	15.02	15.62	4.50	57
Johns-Manville Corp.	3.17	3.28	1.40	35
Kimberly-Clark Corp.	4.29	4.52	1.40	20¼
MacAndrews & Forbes Co.	3.68	3.70	2.50	36¾
Marathon Corp.	3.39c	3.93g	1.40	21⅞
Mead Corp.	7.33	7.10	2.00	18
National Container Corp.	4.13	3.11	1.20	10
Paraffine Cos. Inc.	2.40a		1.20	21½
Rayonier, Inc.	7.30	8.47	1.00	31¾
Ruberoid Co.	10.88	12.13	2.75	61¾
St. Regis Paper Co.	2.66	2.87	0.60e	10⅜
Scott Paper Co.	3.02	3.49	2.20	46½
Sutherland Paper Co.	6.87	6.56	2.50	
Taggart Corp.	1.29		0.60	
Union Bag & Paper Corp.	7.93	8.35	3.00	31⅜
United Board & Carton	4.95b	3.39g	1.00	10⅝
U. S. Gypsum Co.	10.00	12.49	6.00	97
United Wallpaper	(d)0.11a		—	3⅞
West Virginia Pulp & Paper	11.40c	11.56g	4.00	

(a) Year ended 6/30/48
(b) Year ended 5/30/48
(c) Year ended 10/31/47
(d) Deficit
(e) Plus extras
(f) Year ended 4/30/48
(g) 12 months to approximately 7/31/48
(h) 12 months to 8/21/48
(*) Pro forma

Dividends Declared

National Container Corp., and subsidiaries, showed net profit for the six months ended June 30, 1948, as $3,384,111.79 or $1.32 per share after preferred dividend provision, against $5,997,383.68 and $2.35 after adjusting for three-for-one split up in the first half of 1947.

Consolidated net profit for 1948's second quarter amounted to $1,753,528.29 or 63 cents a share contrasted with $2,888,359.15 and $1.11 after adjusting for three-for-one split up in 1947's second quarter.

Funded debt exclusive of current obligation provisions is reported as reduced to $1,141,985.24 with the expectation that funded debt will be entirely eliminated before the end of 1948. Working capital totaled $5,085,653.54 on June 30, 1948.

West Virginia Pulp & Paper Co., reported net profit of $8,001,819 or $8.35 a share for the nine months ended July 31, compared with $7,878,734 and $8.19 a share for like period of 1947. Total income for the nine-months totaled $15,827,179, against $15,794,879 in 1947. Special dividend of 25 cents and regular quarterly dividend of 25 cents per common share, payable Oct. 1 to holders of record, Sept. 15, have been declared. Similar special dividend was paid in the three previous quarters.

Great Northern Paper Co., and wholly-owned subsidiaries, report net profit of $2,165,012 or $2.17 per share for the first six months of the year. Deductions of $100,000 for excess cost of replacement of pulpwood inventories involuntarily liquidated in prior years, and $100,000 provision for contingencies reserve leave earned surplus at $1,965,012 or $1.97 a share. This contrasts with earned surplus of $2,080,639 and $2.09 a share for like period of 1947.

Gaylord Container Corp., and subsidiaries, show net income of $4,228,498 or $1.81 a common share for the six months ended June 30, 1948, contrasted with $4,751,017 and $2.03 a share last year. The quarter ended June 30 earned $2,141,809 or 92 cents a share against $2,686,319 and $1.15 a share for 1947's period. Expenditures of $2,469,320 for the program of enlargement in plants and facilities were reported for the 1948 half year.

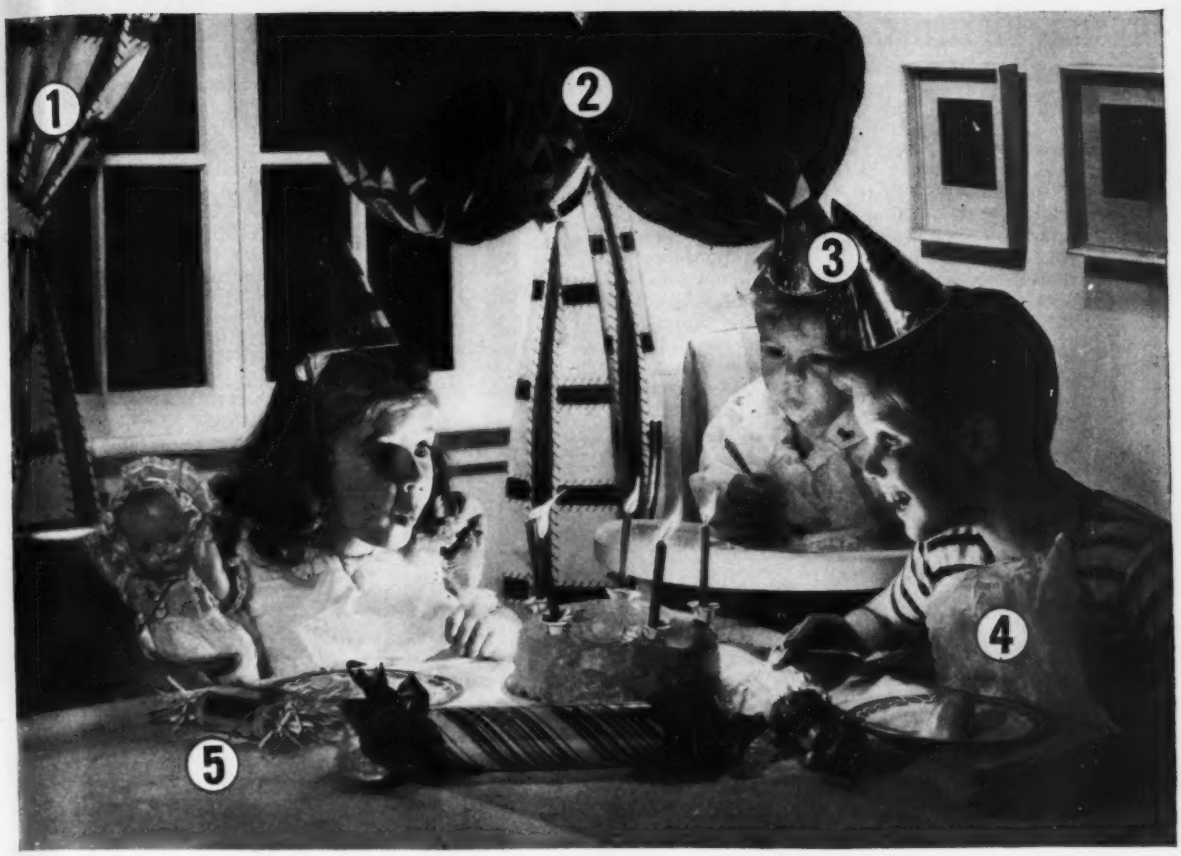
Gaylord Container Corp. declared dividend of 37½ cents per common share payable Sept. 10 to shareholders of record Sept. 2, 1948.

Kimberly-Clark Corp., for the first half of 1948, reported net profit of $2.48 a share compared with $2.81 last year on a smaller amount of outstanding stock. Total net profit for the half year was $4,087,916 against $3,744,966 for like period 1947. Net sales were $55,245,209 compared with $43,680,892.

June quarter profit totaled $2,265,463 or $1.39 a common share, against $1,787,139 or $1.34 for June quarter 1947.

S. D. Warren Co., declared a dividend of 35 cents a share on common stock, payable Sept. 1, 1948 to holders of record, Aug. 14, 1948. A dividend of $1.12 per share has been declared on $4.50 cumulative preferred stock of the company, payable Sept. 1, 1948 to holders of record, Sept. 1, 1948.

Donnaconna Paper Co., Ltd., report net profit of $665,088 or $1.62 per common share for the six months period of 1948, contrasted with $683,848 and $1.67 for like period of 1947.



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BETTER THINGS FOR BETTER LIVING ...THROUGH CHEMISTRY

Organic Pigments Production Peak

WASHINGTON — Continuing an upward trend that began during the war, production of organic pigments reached an all-time peak in 1947 of 35,600,000 pounds, seven percent above the 1946 previous record, the U.S. Tariff Commission reported last week in a preliminary report of 1947 production of synthetic organic chemicals.

The increase was attributed largely to the greater demand for use in wallpaper, paints, plastics, printing inks, etc. Lithol red toners, peacock blue lakes and toluidine red toners, were the pigments showing greatest gains, said the Commission.

Of the total of 1,251,000,000 pounds output of all resins in 1947, paper, textile, and leather treatment accounted for use of 54,000,000 pounds, adhesives, 96,000,000 and 453,000,000 for various protective coatings.

Production of surface-active agents continued to increase in 1947, said the Commission, amounting to 291,000,000 pounds, or 20 percent above the 1946 production. Production of cyclic and acrylic sulfated and sulfonated compounds had a combined total of 263,000,000 pounds, or more than 90 per cent of the total output of all surface-active agents. Sulfated and sulfonated products produced in largest volume included benzenoid compounds, aliphatic and aromatic petroleum sulfonates; oils, fats and waxes, and sulfated and sulfonated alcohols and esters.

Miscellaneous chemicals including solvents, flotation agents, paint dryers, etc., totaled 10.1 billion pounds, 21.2 percent over 1946 output.

Production of rosin adducts was 5,267,000 pounds; sales 4,031,000 pounds, valued at $1,194,000; production of rosin esters was 78,280,000 pounds; sales 70,005,000 pounds, valued at $13,754,000; tall oil esters, 3,032,000 pounds; sales, 2,900,000 pounds, valued at $544,000; urea and melamine resins, total, 112,401,000 pounds; sales, 105,252,000 pounds, valued at $35,135,000. Sulfonated tall oil production was 526,000 pounds; sales $517,000, valued at $71,000.

The above are highlights from the statistics in the report which is voluminous, and is available from the U. S. Tariff Commission in Washington, or its New York office in the Customs House.

1960 Newsprint Needs

MILWAUKEE — Newsprint requirements of the country's daily papers over the next 12 years were projected here on September 20, when newspaper executives opened a two-day meeting at the Schroeder Hotel with representatives of Canadian newsprint mills to discuss prospects for stepped-up newsprint tonnage to meet publishing requirements.

Harold S. Barnes of New York, acting director of the Bureau of Advertising, said that American daily newspapers could by 1960 be expected to require 684,000 tons of newsprint more a year than 1947's annual tonnage consumption of 4,278,000. By 1950, Mr. Barnes estimated, the daily press in the United States would require 183,000 tons more than its 1947 consumption.

A survey of 801 newspapers affiliated with the ANPA presented to the meeting by Cranston Williams, general manager of the ANPA, showed that 494 newspapers would require an additional 472,538 tons of newsprint during the next five to ten years.

Chemical Output Climbs

WASHINGTON—Increased production of soda ash, salt cake and sulfuric acid were reported for July over June, in the latest Census survey of these chemicals, reported September 21.

Figures for July 1948, over June, showed: soda ash, total, wet and dry, 398,871 short tons and 347,656 respectively; crude salt cake, 50,842 short tons and 50,573; sulfuric acid, 939,994 short tons and 838,982, respectively.

Reductions in output were shown for chlorine, gas, 129,445 short tons compared with 133,231 tons in June; and caustic soda, 126,720 short tons from 130,496.

A BIG NAME IN PAPER & BOARD

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DOMESTIC AND EXPORT

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New Mill Map Out

NEW YORK — J. H. H. Muirhead, civil engineer, 230 West 108th street, reports that his map, *Pulp and Paper Mills of the United States, Canada and Newfoundland,* is now available in the 1948 edition.

On the map, which is printed in 22- by 34-inch, and in 30- by 44-inch sizes, the cities, towns and villages having pulp and paper mills are located to show the extent of the industry at a glance. So many mills are located in New England, New York, Pennsylvania, New Jersey, Delaware and Maryland that a large-scale map of these states has been inserted.

Across the bottom of the map is a list of the firms and companies operating in each place. Locations are of the mills, not necessarily offices or warehouses. Where two names are given one is the holding or operating company. Where advisable plant location is followed by name of post office.

Classification of the industry is indicated by letters in front of company names: (A) Ground Wood Pulp, (B) Soda Pulp, (C) Sulphate Pulp, (D) Sulphite Pulp, (E) Book Paper, (F) Building Paper, (G) Newsprint Paper, (H) Paper, Fibre, and Box Board, (K) Tissue Paper, (L) Wrapping Paper, (M) Writing Paper. Where no letter is given the product is other than listed in the foregoing which comprises the major part of the industry.

In the main list, only active mills are mentioned, idle mills are on a separate list, while dismantled mills are omitted.

Paper Popularity Grows

NEW YORK — There is a growing acceptance of burlap bags with paper filling valves, according to manufacturers at the fall meeting of the Textile Bag Manufacturers Ass'n. at the Biltmore Hotel on September 22. Reporting on the technological processes and increase of packaging services, bag manufacturers said that paper band labels were becoming more popular and that there has been a notable improvement in the quality of wash-out inks.

Says Paper Perils Cotton

GREENVILLE, Miss.—"Synthetic fibers and paper have been making a particularly successful attack upon cotton's end-use markets and the cotton industry today is in a very real fight for its existence," Robert B. Evans, agricultural economist for the Southern Regional Research Laboratory, told the Fifth Annual Cotton Breeders and Spinners Conference here on September 21.

Dividend Payments Up

WASHINGTON — Publicly reported cash dividend payments in the paper and printing industries had a combined total of $5,800,000 in August, compared with $4,900,000 in the same month last year, the Department of Commerce reported this week.

Alhydro FLOC PRODUCER

FOR INDUSTRIAL OR MUNICIPAL WATER TREATMENT PLANTS AND SWIMMING POOL INSTALLATIONS

"It's the answer to turbidity and color removal"

"Right! The most efficient formation of stable floc yet"

The Alhydro Floc Producer assures continuous production of a readily controllable concentration of aluminum hydroxide floc. And Alhydro floc is completely stable . . . will re-form immediately if broken up by pipes or pumps.

The Alhydro unit uses only aluminum plates and low voltage direct current to form the floc. Thus, it makes 69 lbs. of aluminum treat as much water as nearly ¾ ton of ordinary coagulants . . . solves the problem of chemical storage.

Simple to operate, easy to maintain, one unit measures only 45″ x 13″ x 34″, and will treat an average of 300,000 gallons of water per day. The Alhydro unit may be installed singly or in multiples, in existing or proposed water treatment plants.

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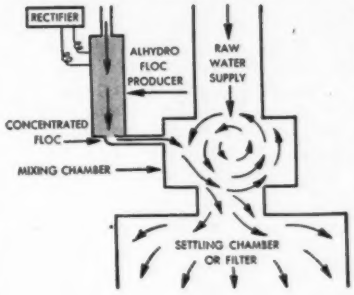

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- No conditioning or correcting water before or after treatment
- Simplicity of operation.
- Minimized storage problems
- Easily controlled floc concentration

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Juniors Told About Tall Oil

NEW YORK—What tall oil is, how it is recovered in kraft mills pulping southern pine, the technology of its refining by high-vacuum distillation, its industrial uses, its competition with other fats and oils, and its growing commercial importance were discussed by Dr. Arthur Pollak, consulting chemical engineer, guest speaker at the first fall meeting of the Junior Chemical Engineers of New York City, at Child's restaurant, 423 Lexington avenue, the evening of September 30.

A new slate of officers took over at this meeting. They were: Fritz von Bergen, who is in market development with the Westvaco Chemical Corp., president; Clifton C. Sutton, a section head in physical chemistry at the General Foods Central Laboratories in Hoboken, N. J., vice-president; and Dellason F. Bress, a process engineer in the industrial division of the Foster-Wheeler Corp., secretary-treasurer.

Dr. Pollak, who has been active in tall oil development for 20 years, was formerly director of the development department of the West Virginia Pulp & Paper Co.

Biggest producer of tall oil in this country is the Arizona Chemical Co., jointly owned by the International Paper Co. and the American Cyanamid Co. Other big producers are the Camp Mfg. Co., Champion Paper & Fibre Co., Continental Can Co., Gaylord Container Corp., National Southern Products Corp., Newport Industries, Inc., North Carolina Pulp Co., Union Bag & Paper Corp. and West Virginia Pulp & Paper Co.

The Junior Chemical Engineers is a group of chemical engineers who range in age from their late twenties to their mid-thirties. They are all actively engaged in their profession, working for corporations located in the greater metropolitan area. Technical discussions, followed by question-and-answer periods, are a regular feature of their monthly meetings and dinners. At each meeting the guest speaker is an authority in his field.

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5 PROBLEMS IS YOURS?

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2. **Recovery of waste paper for re-use?** TRITON N-100 is unusually effective in de-inking and reworking the stock by cooking with caustic.

3. **Dispersing pigments or other materials in paper coatings?** TRITON N-100 efficiently disperses carbon black in the coloring of paper—levels other colors and pigments to give even shades and eliminate streaking. Useful in casein-bound coatings.

4. **Improvement in wetting of absorbent papers, tissue, toweling?** Here, again, TRITONS are useful, particularly on impregnating and wet strength grades.

5. **Washing felts?** TRITONS simplify this problem. TRITON 770 and TRITON N-100 are alkali-stable, efficient detergents, effective at low concentrations and in hard water.

These are only a few of the paper-processing jobs accomplished faster, more efficiently, less expensively with TRITONS. As wetters, dispersers, detergents and emulsifiers, this diversified family of anionic, cationic, and non-ionic surface active agents is used throughout the industry. We'll be glad to give you full information and samples. Just write . . .

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Studying Old Timber

COOS BAY, ORE. — The Coos Bay Lumber Co., Weyerhauser Timber Co. and several other lumber concerns are cooperating in a project designed to increase utilization of nearly 200 billion board feet of decayed and defective old-growth Douglas fir timber in Oregon and Washington.

Study has been started in the Oregon forest products laboratory at Oregon State college.

The laboratory's director, Dr. P. B. Proctor, estimates that millions of dollars will be saved to the northwest through study to determine what stands are deteriorating the most rapidly, what logs from defective trees are marginal under existing market conditions, what trees are submarginal because of rot, and what use can be made of presently unmarketable logs.

Other firms sponsoring the study are Pope & Talbot and Crown Zellerbach. Several state bureaus also are interested.

Opposes FOB Decision

NEW YORK — Howard G. Wascher, executive vice-president of the Corn Products Refining Co., issued a statement on September 24 with respect to the motion filed by eight other members of the corn derivatives industry with the Federal Trade Commission. The motion asked dismissal of the recent complaint of the Federal Trade Commission against the industry to enforce f.o.b. mill pricing as an application of the Cement Case decision.

Mr. Wascher said, "I am convinced that the attempt by the Federal Trade Commission to alter the pricing of corn derivatives would result in upheaval and dislocation, not only in the corn derivatives industry, but in consumer industries, with higher prices to customers. We feel strongly that the complaint should be dismissed."

Quality Control Conference Coming

CHICAGO—The nine midwest sections of the American Society for Quality Control will hold their Third Midwest Quality Control Conference at Hotel Sherman November 4-5, with the conference again being sponsored by the Chicago Association of Commerce and Industry.

Prof. Lloyd A. Knowler of the University of Iowa is chairman of the program committee. Highlighting the conference program will be the luncheon sessions, at which top-ranking business executives will give down-to-earth talks on the benefits of statistical quality control applications in their plants.

The conference will feature exhibits of the latest devices for measurement and control.

Some of the featured speakers and their subjects are: Dr. Carl E. Noble, quality control engineer, Kimberly-Clark Corp., Neenah, Wis., "Sampling in an Uncontrolled Process"; George N. Cornell, chief chemical engineer, A. E. Staley Mfg. Co., Decatur, Ill., "Quality Control — A New Chemical Engineering Tool"; A. H. Becker, product control manager, U. S. Rubber Co., Indianapolis, "Operator Interest and Cooperation in Statistical Quality Control"; Ray W. Good, assistant chief inspector, Robertshaw-Fulton Controls Co., Youngwood, Pa., "Quality Control Procedures in Relation to Time Study"; Carl E. Hoover, quality control engineer, Perfect Circle Corp., Hagerstown, Ind., "Statistical Quality Control in the Manufacture of Piston Rings"; and Kort K. Pfabe, assistant factory manager, Carter Carburetor Corp., St. Louis, "Statistical Quality Control at Carter Carburetor Corp."

ECA Authorizations Revised

WASHINGTON — Cancellation of an authorization of $1,434,000 for newsprint to be purchased in Sweden for use of Bizonal Germany was reported by the Economic Cooperation Administration last week. It is understood that a later authorization will be issued for purchase of a substantial part of the original amount of newsprint from other sources than Sweden.

Unofficial information is that the original authorization was withdrawn after it was learned that the required amount of newsprint could be obtained more economically from other countries in view of present prices in Sweden. The paper will be obtained from two other countries, to be named in the near future, it is understood, and a later authorization to cover the purchase will be announced at that time.

The ECA has authorized an increase of $17,000 for wastepaper to be purchased in the United States for Bizonal Germany.

Other authorizations include $119,000 plus $10,000 ocean freight for hemp fiber to be purchased in this country for France; and $383,000 for henequen fiber from Mexico, for the same country.

New Monsanto Growth

NEW YORK—The Monsanto Chemical Co. disclosed on September 28 that it had begun commercial production of vinyl chloride plastic resins. Felix N. Williams, company vice-president and general manager of the Plastics Division at Springfield, Mass., said that production followed several years of pilot plant and research investigation and plant building.

J-M Gets Brammer Control

NEW YORK—Paper & Industrial Appliances, Inc., reports that the Johns-Manville Corp. has installed a Brammer recording consistency controller in its new Quinterra asbestos-base paper plant at Tilton, N. H.

Danish Casein to Italy

WASHINGTON — Denmark is committed to furnish $521,000 worth of casein to Italy between June, 1948, and May, 1949, under a trade agreement just reported to the Department of Commerce.

Lukens Open House

COATESVILLE, Pa. — In cooperation with the Commonwealth in the observance of "Pennsylvania Week" (September 26 to October 2), the Lukens Steel Co., and its divisions, the By-Products Steel Co. and Lukenweld, will hold open house-plant receptions on September 30 for employes, members of their families and friends, as well as all others who care to attend. A second open house-plant reception will be held on October 7.

Chemical Linings, Inc.

WATERTOWN, N.Y.—Murray H Bennett reports formation of Chemical Linings, Inc., with offices at 407 Electric building. "This company will engage in installations of digester and accumulator linings, all types of tile constructed chests, tile linings and special acid proof work," Mr. Bennett told *Paper Trade Journal*.

Twitchell Names Weingard

PHILADELPHIA — Barney Weingard has been named West Coast representative of E. W. Twitchell, Inc. Formerly of Weingard Brothers, New York City, he has opened an office at 607 South Hill street, Los Angeles 14. His brother, David, with whom he was associated in New York, will continue to represent the Twitchell company in New York under the name of the David Weingard Co.

Addresses Engineers

SAN FRANCISCO — Al Klimek, director of sales training of the Zellerbach Paper Co., was guest speaker at the first fall meeting of the Bay Area Chapter of the California Society of Professional Engineers.

Howarth Hospitalized

CHATHAM, N. Y. — Charles W. Howarth, Jr., son of the president of the Columbia Box Board Mills, Inc., who was in a serious automobile accident near his home, is in a hospital. He is a representative of the company.

Erecting Plant Addition

NEW HAVEN, Conn. — The New Haven Pulp & Board Co. is erecting an addition to its building which it is estimated will cost $700,000, Joseph F. Miller, president, reports.

In Cambridge Quarters

BOSTON—The Stone & Forsyth Co., dealer in wrapping paper and manufacturer of folding paper boxes, has removed from 67 Kingston street to its new plant at 350 Brookline street, Cambridge, Mass.

Phillips Recuperating

COHASSET, Mass.—Robert M. Phillips, secretary of the Albia Box & Paper Co., Troy, N. Y., taken seriously ill while vacationing in Scituate, Mass., is recovering at the Cohasset Private Hospital.

Holland Committee Head

LOS ANGELES—P. K. Holland headed the paper and paper products committee of the Los Angeles Chamber of Commerce which launched a six-week membership drive on September 15.

TAPPI Empire Meeting Oct. 13

NIAGARA FALLS, N. Y. — The first meeting of the current season of the Western New York Group, Empire State Section of TAPPI will be held at the Prospect House at 6:45 p.m. on October 13.

This meeting will feature a panel discussion relative to the application of starch in the manufacture of paper and paperboard. Members of the panel, who will be prepared to give the members the benefit of their several years' experience in the Industry, include: J. F. Bullard of the Staley Mfg. Co.; James P. Casey of Corn Products Sales Co.; Dr. J. M. Newton of Clinton Industries, Inc.; and Olney R. Steffens of Penick & Ford, Ltd.

Dr. J. Reichert of E. I. Du Pont de Nemours & Co. will preside. The panel discussion will be led by G. H. Rand, Jr., of the International Paper Co., Niagara Falls, I. V. Earle, chairman of the Publicity Committee of the Group, reports.

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PRODUCTION RATIO REPORT*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
August 14	96.1	August 16	104.8
August 21	97.7	August 23	103.7
August 28	95.2	August 30	104.1
September 4	94.0	September 6	84.7
September 11 (Revised)	77.4	September 13	106.9
September 18	**97.5	September 20	107.0

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
Jan.	102.1	May	106.2	Oct.	109.5		
Feb.	105.9	June	106.2	Nov.	109.3	Jan.	100.3
Mar.	106.1	July	93.5	Dec.	101.5	Feb.	99.8
Apr.	105.1	Aug.	104.2			Mar.	100.8
		Sept.	102.0	Year Avg.	104.3	Apr.	100.8
						May	100 5
						June	‡94.5
						July	‡88.1
						Aug.	‡96.8

‡ Preliminary Ratios.

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	95.0	92.2	88.1	87.8	83.8	100.0	103.4	95.8
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

** Indicates 1948 volume of 175,307 tons—Comparable week 1947—169,577.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
August 14	93	August 16	100
August 21	93	August 23	100
August 28	93	August 30	99
September 4	91	September 6	79
September 11	76	September 13	103
September 18	97	September 20	101

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	102	102	100	94	81	92					

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Obituary

Jacob H. Temple

Jacob H. Temple, 69, former treasurer of the C. W. Mills Paper Co., Grand Rapids, Mich., was killed in an automobile accident at Middlebury, Ind., on September 16, when his automobile collided with a truck. Surviving Mr. Temple are his widow, Mrs. Rena Temple, who was riding with him at the time of the accident; and a daughter, Mrs. James Daane.

Clifford M. Grover

Clifford M. Grover, 68, president of Grover Bros., Newark, N.J., stationery firm, died of a heart attack at his summer home at Seaside Park, N.J., on September 17. Surviving are a son, Clifford E. Grover; a brother, Bertram W.; and a sister, Mrs. Bessie Grover Kull.

Harry Luzerne Mitchell

Harry Luzerne Mitchell, president of the West Penn Paper Co., Bloomsburg, Pa., died on September 13 in Pittsburgh, following a brief illness.

Bernhard Muller

Bernhard Muller, 85, retired, who founded the Standard Stationery Co., Philadelphia, died in Mt. Sinai Hospital in that city on September 20.

George F. Terry

George F. Terry, 61, credit manager of the St. Regis Paper Co., New York City, died of a heart attack in his office on September 24. Surviving him are his widow, Mrs. Frances Terry of Brooklyn, and two sons, Robert B. Terry of Oswego, N.Y., and Francis Terry, Jr., of Brooklyn.

Shine Addresses Sapeyes

NEW YORK — George Shine, staff member of the National Paper Trade Ass'n., discussed problems arising from mill-merchant relationships at the September 27 meeting of the Salesmen's Ass'n. of the Paper Industry at Midston House.

Greenway Broadens Duties

NEW YORK—Norman F. Greenway, a vice-president of the Robert Gair Co., Inc., was elected a director of Cluett, Peabody & Co., Inc., on September 23.

Westfield's James Elected

NEW YORK — Earl E. James, controller of the Westfield River Paper Co., Inc., Russell, Mass., has been elected to membership in the Controllers Institute of America. Top financial executives of 3,206 leading American companies in every branch of industry are members of the Institute which was founded in 1931.

Conbur Incline Testing Device

The Conbur Incline Testing Device is an instrument for testing the adequacy of shipping containers, methods of reinforcing them, methods of closing or sealing, methods of applying inside blocking, cushioning, and padding, by causing stress and strain to be applied to a container through controlled impacts.

The name is taken from the first syllables of the second and third words of the name "Freight Container Bureau," and the apparatus was originated and designed by two engineers of that Bureau. It was developed and constructed in 1937, and represented the efforts of the Bureau to produce a simple, easily constructed, and readily operated piece of apparatus on which could be tested containers fully packed and closed and ready for transportation. We were not entirely satisfied that the drop, the compression and the drum tests gave what was wanted or desired, and the Mullen or Cady test simply tested the material of the containers. It was recognized, however, that each device had its field and purpose and would give the packaging engineer valuable and useful information.

Experience showed that most damage to articles in containers was caused by stress and strain following impact which occurred either in handling or while in transit, and this led to working out a modification of the drop test, for in this test there is definitely an impact similar to that which a package may receive in moving from shipper to consignee. The activating force in both the drop and Conbur tests is gravity, which does not change, but the drop test had a deficiency, in that the tests are not always exactly reproducible, and further, there was a secondary impact or drop, the results of which could not always be observed, ascertained, or accounted for.

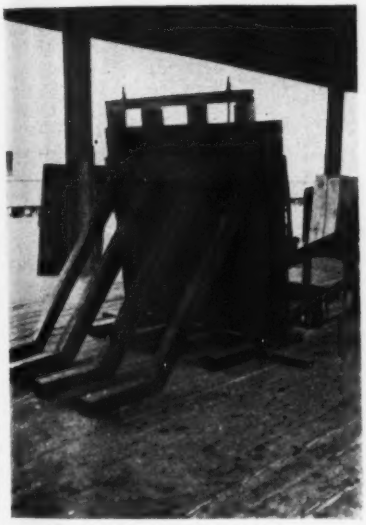

Figure 2—Rear view of bumper, showing its rigid construction.

Courtesy of Association of American Railroads, Operations and Maintenance Department, Operating-Transportation Division, Freight Loading and Container Section.

Construction

The Conbur device is a simple one which can be easily and cheaply constructed, and there are only four necessary points to be borne in mind. The first, and the most important, is that

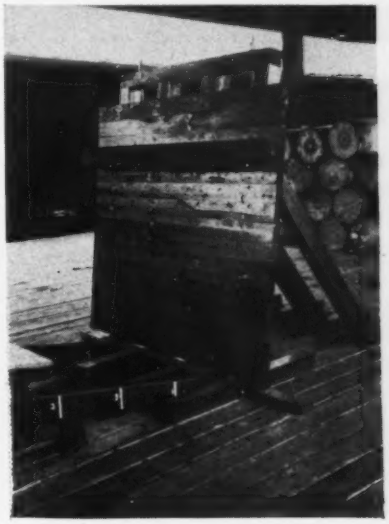

Figure 3—Bumper with crosswise hazard in position near top.

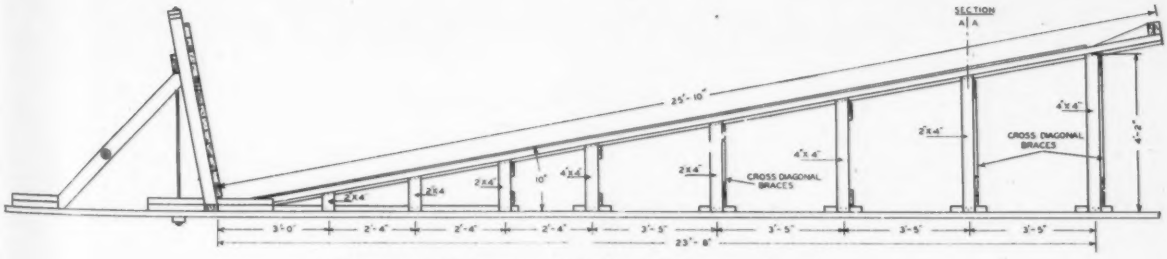

Figure 1—Side elevation of Conbur incline testing device.

INDUSTRIAL DEVELOPMENT

Paper Trade Journal, in this section, makes space available for discussion of administrative and operating problems. Space is also available for the presentation of independent studies and research on technical and engineering subjects. Feature stories of paper mills, converting plants and inter-related industries will be included. An invitation is cordially extended to all who are qualified to discuss these subjects. Original manuscripts submitted exclusively to Paper Trade Journal and found suitable for use in this section will be paid for immediately upon acceptance. Submit manuscripts to E. P. McGinn, Industrial Editor.

the angle of the incline to the horizontal be maintained at 10°; second, that the track on which the dolly rolls be straight and smooth; third, that the wheels under the dolly be free running and ball-bearing; and, fourth, that the backstop be sturdily built and unyielding and at 90° to the incline.

Figure 1 shows a side elevation of the device.

The face of the bumper of the machine is constructed of 2″ x 4″ material to provide a flush surface for contact with the article to be tested and is, in turn, reinforced at the rear as shown in Fig. 2, with 4″ x 4″ braces to provide rigidity. The entire bumper is tied down in position with two ⅝″ steel rods.

The bumper is also equipped with a removable crosswise 4″ x 4″ member used as a hazard, which can be so placed as to contact the containers at the time of impact directly across the top or bottom edges of the same. This 4″ x 4″ member can be moved to any position on the bumper to simulate impacts against any section or corner of the container that may be desired and to provide a hazard for containers of different heights. This feature is shown in Fig. 3.

Fig. 2 illustrates the rear construction and method of bracing the bumper so that it may be rigid at all times.

While the original device and drawings show the tester with an incline length of 25 feet, it is not necessary to keep to this length where space is not available. Many of the commercial concerns and the testing laboratories, which are using the device, conduct their tests from points six to 12 feet up the incline. The gauge of the track may vary somewhat from that which is indicated without in any way vitiating the results of any tests.

Uses of Conbur Tester

On this device a container ready to be shipped — packed and sealed as it would be for commercial shipment — can be placed on the dolly and subjected to impacts. The impact can be made on any or all faces of the container in rotation, against any of the edges, or against any of the corners by making use of a simple carriage placed on the dolly. By inserting a block on the backstop, eccentric impacts can be readily obtained with a twisting or skewing action.

It is capable of testing wood, fiber, plywood panel, or wirebound boxes; wooden or metal barrels; crates of all descriptions; drums, baskets, and pails. Depending upon the size of the dolly, containers at least four feet cube can be readily tested.

The stress and strain created by this device is similar to that to which a container would be subjected in a factory, if sent down straight or spiral chutes, while being handled on or off two-wheel or four-wheel hand trucks, while being handled into and out of delivery trucks, over station platforms, into and out of cars.

Value of the Device

Several commercial and government laboratories including the armed services have equipped themselves with this device, as well as about 65 different commercial concerns. The reports received from these organizations indicate that they have found the tester most useful in determining not only the adequacy of their shipping containers, but also that of the reinforcing means used and, more particularly, the value and worth of inside packing and cushioning methods and materials. Rather interesting, many have learned of weaknesses in the design of their products and so have been able to redesign or correct these weaknesses and thus avoid damage which might otherwise have happened to their goods while in transit.

The action is that of a delayed drop; hence in making this test it is much easier to observe what happens than with a drop test, as the eye cannot always follow the quick action that occurs in a plain drop test.

Common Transportation Hazards

The vertical height at the end of the 25-foot incline is approximately four feet, which is approximately the height of the tailboard of many delivery trucks, of platforms at warehouses and business houses, and of freight car floors. When a container falls from this height, the fall is usually accidental, and to set up this height as the criterion on which the construction of containers should be based and the inside packing developed is more than could be reasonably expected. Hence it is that most laboratories and industrial users make their tests six to 12 feet up the incline. For export shipping, tests from the top of the incline may be indicated.

The Conbur Incline Testing Device has proved its worth, it has been helpful to those who are using it, and it has a definite place in the category of testing devices to be used by those interested in the art and science of container construction and packing.

Testing and Designing Fibreboard Containers*

By J. D. MALCOLMSON

Director Products Development, Robert Gair Co., Inc.

The testing and designing of fibreboard containers is much more of an exact science today than it was a few years ago. World War II greatly accelerated this technique because of the urgency to deliver American made merchandise to all parts of the world. Victory literally depended on the safe arrival of ammunition, subsistence, clothing and all the other military materiel and in most cases the method of packing determined whether the merchandise arrived in usable condition. Many of us still shudder when we remember the experiences of the early days of the war and our chief consolation is the excellent showing that packaging made toward the end of the war.

The war also developed a large crop of top notch packaging engineers and these young men are now located as container salesmen, laboratory technicians and packaging engineers. Usually they can show the old timers a lot of new wrinkles in efficient packaging methods.

In the early days of the corrugated box, we used to develop a new container by hit or miss methods. If one scheme didn't work, we would try something else. If we had doubts, we would pack and seal the box and roll it down the back stairs—and usually we were afraid to look at the results. We made innumerable test shipments—one or two boxes at a time. Sometimes we suspected that our competitors must have got wind of the shipment and sabotaged it. I don't know anything more uncertain than the results of a test shipment of a single box. Its too much like gambling, and technical men don't like gambling—much.

Then came the revolving *drum tester* (about 30 years ago) and we thought we had the last word in the technical evaluation of a container. As a matter of fact the drum was, and still is, a very valuable testing tool if properly used. It revealed the container's ability to protect the contents as well as to retain them, but it didn't actually drop the box nor did it inflict severe impacts. It didn't measure resistance to compression nor a lot of other important properties of a shipping container.

Today we know that there is no uni-

* A talk delivered before the Freight Loss and Damage Prevention Committee, Great Lakes Regional Advisory Board, Cleveland, September 14, 1948.

versal testing machine. The real pay off is how the package stands up under the actual conditions to which it is to be exposed. One way to find out is to make hundreds of test shipments—enough to "average out" the abnormal damage. But this is a costly and time consuming procedure. It is too much like burning down the house to roast the pig.

The next best method is to devise testing instruments that will measure the specific conditions we are most interested in and that is just what has been done.

Thus a *compression test* is used on merchandise such as soap flakes cartons where stacking loads must be carried by the walls of the container and not by the contents. Such a test, however, means little when applied to the top of a case of canned goods because the cans themselves are so strong in that direction. End compression on can cases is valuable but a drum test is even better.

Glassware and liquids in glass are naturals for a drum tester, although a *drop test* is preferred by some shippers. Heavy or massive articles such as washing machines or refrigerators in fibreboard are best tested with an *impact tester* such as the Conbur. Case eggs are often subjected to a *Vibration test.*

The components of fibreboard boxes are also subjected to various tests. This is really another subject so we will only mention some of the more important tests such as the Mullen, Cady, Caliper, Rigidity, Puncture, Weight and Score.

Many large shippers have installed laboratories of their own where one or more of the desirable container qualities can be evaluated with standard testing machines. These instruments can be purchased or some of them, such as a compression tester can be constructed at home. Most of the home made compression testers are built over a platform scale.

However, it is not necessary to have your own testing laboratory. There are excellent custom laboratories available, fully equipped to test every property of a container. Two of the best known are the Don L. Quinn Co., Chicago, and the Container Laboratories, Inc., of New York City. Several public or semi-public institutions also have box testing equipment. Examples are the U. S. Government Forest Products Laboratory at Madison, Wis., in the Institute of Paper Chemistry, Appleton, Wis. The armed forces also maintain several testing laboratories of their own.

In the early days of box testing it was soon found that most results are considerably affected by the moisture content of the fibreboard which in turn depends on the relative humidity of the atmosphere. Therefore, whenever possible this work should be done at some constant relative humidity and temperature. Most box testing laboratories operate at 50 percent R.H. and 73° F.

These constant conditions not only make possible a dependable comparison of day-to-day results but also prevent many misunderstandings. For example, a corrugated box maker might guarantee a top to bottom compression of 900 lbs., on an empty corrugated container at 50 percent R.H. and 73° F. If this box is later tested by the customer on a humid Summer day (say 80 percent R.H.) without conditioning, it would test about 600 lbs., or only two-thirds of the guarantee.

On another occasion, a customer complained that a shipment of 200-test corrugated boxes were averaging only about 185. Investigation showed that the customer was testing the boxes in a mid-Summer atmosphere of between 80 percent and 90 percent humidity. The box maker had shown a test of 235 in his laboratory under controlled conditions of 50 percent R.H. and 73° F. A few days later when the weather had cleared up, these same boxes were going over 200 on the customer's Mullen tester.

Rule 41 of the Consolidated Classification now states that "Cady or Mullen test must be made after board has been subjected for at least three hours to normal atmospheric conditions (50 percent to 70 percent relative humidity)". A minimum of 50 percent is given because the Mullen test of corrugated board will also be abnormally low if the boxes have dried out, as is often the case when they are stored or exposed in a steam heated room in the Winter time.

Speaking of Rule 41, you may have noted that glassware and liquids in large metal cans are the only commodities whose container specifications are covered in the Rule itself. The carriers, boxmakers and shippers all realize that there is no universal specification that will cover fibreboard containers for all commodities. Rule 41 described boxes but does not mention performance tests. Committees representing these interests are now at work in an endeavor to develop specifications and performance tests for specific commodities. An indication of this trend is the fact that the Classification Committee recently granted a permit under Rule 49 for a shipper to use a lower Mullen test box provided that it meets a minimum top to bottom compression test.

So far we have not said much about the designing of fibreboard containers. As we become more familiar with testing methods for specific commodities, we realize that our container designs must also be affected by the nature of the contents.

Thus, with liquids in glass, we find laboratory tests, that glass breakage may occur in the center of the package and not always at the edges and corners. The experienced designer has accordingly adopted the maxim: "Build from the center out." By this he means that it is the utmost importance to protest the bottles from each other and to produce a snug fit. We high even go so far as to say that strong and proper inner packing here is almost more important than the test of the outer case. Here the designer likes to check his progress with some form of rough handling such as the drum or drop tester.

. For packing expensive, fragile objects like small radios, television sets and certain furniture items, the designer has to think of outside blows and impacts so he provides creased sheet "air cushions" around the six sides and also uses various creased and/or die cut sheets to keep the contents from shifting. Here again the design is checked by drum and drop tests, or if the case is large or heavy, he may add the impact test.

Some commodities present very difficult combinations of heavy weight at one end and fragile portions at the other end. An electric fan is a good example. At one time it was thought necessary to provide very elaborate inner packing to protect the blades and wire guard. Today we know that if we can lock the heavy base and motor in such a way that they will not shift inside the box, we can leave the blades alone.

Heavy or massive objects such as washing machines or refrigerators usually require a wooden skid to which the contents and the fibreboard box and packing are securely anchored, usually with steel straps. One of the greatest developments in fibreboard designing has been the remarkable replacement of wood by fibreboard for extra large items such as electric refrigerators weighing several hundred pounds. One of the largest producers is now shipping all its domestic refrigerators in a corrugated package with only the bottom skid made of wood. You can read the specifications under Package No. 994, which was added to the Classification on August 18, 1948, and carries no size or weight limit. They are saving money and having hardly any claims on this package which has been in use now for about a year on a Rule 49 permit. Don't think, however, that this design was easily obtained. It was the result of many hundreds of working hours in designing, re-designing and laboratory testing.

We could extend this list to dozens of other commodities, each with its own problem of design, testing and redesign. Suffice it to say, however, that the modern fibreboard case designed is using intelligence, experience and scientific testing methods instead of crossing his fingers and praying, "I hope—I hope."

Role of Industrial Engineering in the Paper Industry

By A. W. HOLLOWAY

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My first response to a question of what industrial engineering can do for the paper industry would be, "What does the paper industry want done?"

This may seem to be an overconfident attitude, implying that industrial engineers can do anything at all that needs doing. However, I want to assure you that this is not the case; our field of operations is actually very limited, and in the course of this talk, I hope to give you an example of a typical industrial engineering study, during which I can perhaps explain and demonstrate those limitations.

What seems to me, however, to be more important than an example of such a study, is to clear up the reasons why I began this talk in the way I did. The question, "What does the paper industry want done?" is a key question. However, it is about our field of operations that I would like to talk first, beginning with a definition of industrial engineering.

Industrial engineering is established tor the purpose of providing information to the management.

Information for Management

The question may well be asked, "How is it that an industrial engineer with very little, if any, experience in our particular field, can be of any help to us." The answer is to be found in three special attributes which the industrial engineer claims to have. He has a specific attitude, a definite method and the necessary time in which to investigate a problem.

His attitude is that there is no end to improvement. His conviction is that there is always a better, cheaper, easier, safer and more effective method. There is never any one best way; it is only today's best way. The industrial engineer has what you might call an overdeveloped sense of curiosity. He is constantly on the lookout for improvement, the phrase "It can't be done" is completely foreign to him.

The definite method which the industrial engineer uses can best be called a questioning method. The difficulty in solving any kind of problem usually is based on not knowing exactly what part of the problem to start on. The questioning approach which the industrial engineer uses enables him to break the problem down into its essential parts and to find the key, the most important part of the problem on which to concentrate.

His questioning method has provided him with a number of special techniques which have arisen from his early beginning with time and motion study. These include the use of process and flow charts, templates and scale models, time and motion study, access to comparative costs, cost analysis techniques, check lists of labor and machine time saving methods.

The industrial engineer must also develop the technique for getting and using the knowledge and experience of others. It is vitally important that when he does this he sees to it that due credit is given for that knowledge and experience.

It will be found that the industrial engineer himself originates very little. Most of the results which he achieves are the result of bringing together in usable form the knowledge and experience of other people.

Perhaps the most important attribute of the industrial engineer is that he has the time to get the facts. It is altogether wrong to say that only industrial engineers do industrial engineering. All supervisors do industrial engineering constantly. As all supervisors will know, however, their time is occupied constantly with immediate problems in connection with the operation of the department to which they are responsible. How many superintendents have said, "If only I had the time to work on these problems." The industrial engineer has time to work without interruption and at constant pressure on their problem.

Management

To go back to my opening paragraph in which I said that industrial engineering is established for the purpose of providing information to the management, I have now tried to show how he gets his information.

Who does the industrial engineer regard as management?

Let us not confuse the term management and manager.

The management is the entire organization of men who make and execute the policies of the company, and who direct the making of its products, or who are appointed to advise and serve those who make policies or direct production.

This therefore includes everyone in all supervisory positions.

A "management," whose function is to make and market a product profitably, is always found to be composed of two essential parts — perhaps three, the third of which is top management. The two operating parts are: (1) The production organization, (2) The service organizations.

Examples of these are the various divisional superintendents and their foremen in the first group, and the maintenance, engineering, accounting, stores, and other such service departments in the second group.

I am going through all this to try and make two things clear: (1) Industrial engineering belongs in the second division, and is a service department. (2) Industrial engineering is not a tool of top management, but is provided for the use of every operating supervisor, as well as for all other service department supervisors, who in turn are required to perform services for all supervisors in the operating group.

Thus the industrial engineer who comes into someone's department must bear in mind that he is in someone else's department. In that department, he has not one iota of authority — he cannot tell the supervisor either what to do or how to do it — he can only advise, and the industrial engineer hasn't done his job until the supervisor is satisfied with what he has done.

Another important thing I would like to emphasize is that the industrial engineer is not a single-purpose tool. Just as a mix-master can, besides mixing cakes, beat eggs, make mayonnaise, squeeze fruit-juices, dice beets, shell peas, grind meat, mash potatoes, and mix drinks, so the industrial engineer can do a number of things besides make time studies and dream up new ways of cutting labor standards.

Which brings us to the point, "What does the paper industry want done?"

Generally when a department head wants something done he has a service department handy which will do it for him. Such service departments are the maintenance department, the accounting department, mill store and the personnel department. There are occasions, however, when he does not know just what needs to be done, who should do it, or how it should be done or when. If, when this is the case, he then turns to the industrial engineer his function will be to get the necessary information to enable the supervisor to determine for himself what needs doing and how it should be done.

Notice that I have *not* said the industrial engineer will tell him how to do it: I repeat — he will get the information which will enable the supervisor

to make up his own mind how the job should be done.

Now I have promised an example of a typical study. The first requisite of this study was that the superintendent of the department wanted it made. The limitations were, and still are, that the outcome of the study lead to results which satisfy the department superintendent and that cost of installation be justified by the savings.

The study was made on the manufacture of circular wooden heads used in shipping certain newsprint for export. An exact check of the production rate showed the superintendent that it varied between somewhat less than three wooden heads per man-hour to just over six, and averaged about five. His average labor costs were thus about 19½c, and his best costs 16c. If he were able to average 16c, he would save $35 on each thousand made. Since last years' production of wooden heads was 63,200, he would have a potential saving of $2,212.

In order to illustrate the method that was used and that is proposed I have had a model prepared. The equipment involved consists of a cut-off saw, a swing cut-off saw, a drill for drilling center hole, tables for the assembly of the wooden heads and a band saw.

One-half-inch boards of random lengths and widths are stacked within reach of the cut-off saw as they come from the resaw operation. These are now cut to length and put on end on the floor by the man operating the saw, from where they have to be carried in bundles of about 15 to a table near where the nailing is to be done.

By providing a wagon which will hold enough wood to make about 25 heads, the distance travelled is reduced by about 1,400 feet for every 100 heads made, and there is a corresponding saving of 12.4 minutes.

In the present method pieces 10" in width are taken to the drill and a 3" hole is drilled in 6 pieces at a time. These are then delivered to the nailers.

To make a wooden head, a piece with a hole in is placed on a table on which the hub of an old saw acts as a jig, over which the piece is fitted. Other pieces are then selected and fitted on either side of the first piece to form the first layer. The process is repeated crossways to form the second layer.

Considerable time is often spent finding the right sized piece to fit right and left to give the proper width to the head, and often it is necessary to rip pieces on the bandsaw to do this.

It is proposed to do away with the old type of assembly jig and substitute a table with a top consisting of a piece of plate, to two edges of which a piece of angle iron has been welded. By marking the location of the center line on each of the angle irons, the person assembling can be sure that the hole, to be drilled later, will not cut the edge of a board.

In the proposed method the boards will not be drilled first, and assembling and fitting can then be done in one direction only, eliminating most of the time now required to rip boards to fit.

In the method now in use, the boards, once they are assembled, must have sufficient nails driven into them to hold them together during scribing. This means picking up hammer and nails twice in the whole operation instead of just once as in the proposed method. The assembly is then scribed so that the rest of the nails will not be driven in where the saw is going to cut. Due to the type of scriber used, the operation is awkward and difficult.

For the proposed method a new type of scriber has been developed, which will not require that some of the nailing be done first, and which is expected to reduce the time for scribing.

It is estimated that these changes will bring about a reduction in time of 89 minutes per 100 heads.

This saving will be offset somewhat by the fact that the time for drilling will be increased. The entire head would now have to be moved to the drill, and it is estimated that this will take 11 minutes longer per 100 heads.

The possibility of mounting a drill on a swinging arm above the assembly table is, of course, being considered, as it would result in a saving of about $320 per year.

A summary of the situation so far is as follows:

The wagon will save	12 minutes
The new assembly method	89 minutes
	101
Less extra drilling	11
Total saving	90 minutes

At an average rate of 97c per hour, this is $1.46 on 100 heads, or, on last year's production, about $925. This saving is based on an overall cost estimate of $14.98 per 100, whereas last year's cost was actually $17.80, or 18 percent higher. Actual savings are therefore likely to be closer to $1,100.

It has also been determined that the job of marking the size on each head can be eliminated except on the occasional order for a few heads less than the standard size. This will save $130 per year.

The next step in the operation, that of sawing the circular head from the square assembly, involves no proposed change.

After the head is sawn, however, it is fed down a chute to the floor below. From time to time someone goes downstairs and stacks the accumulated heads on pallet boards. The pallets are then taken by rail and jitney to the upper paper warehouse and stored until a few days before they are required, at which time they are brought out by jitney to the finishing room.

Each head is then taken off the pallet, a pair of Hazlett clips is nailed on, and the head is put back on another pallet. The jitney is then called again to take and stack the pallets out of the way until the heads are to be used.

It is proposed instead to add the Hazlett clips at the bottom of the chute in the sawmill, before they are first placed on a pallet. This will eliminate one handling of each head (picking it up and putting it down again), and one trip for the jitney. Since the jitney travels nearly 1000 feet in making a round trip from warehouse to finishing room, it is estimated that the saving will amount to about 75c per 100 heads, or $475 on last year's production.

It has also been determined that a further saving of $2,500 is possible by substituting stapling for nailing using a Bliss J25 stapler manufactured by the Bostitch people.

The total possible savings from these proposals is thus as follows:

Manufacturing changes	$ 925
Elimination of marking	130
Hazlett Clips	475
Stapling machine	2,500
Drilling	320
	$4,350

Methods Used in the Study

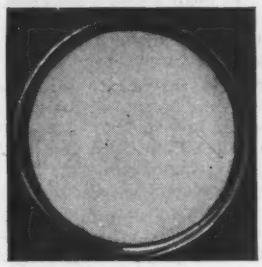
In making this study use was made of cost information, time studies, process charts, work done by my predecessor at Pacific Mills and suggestions by the operator, superintendents and so on.

There is no doubt that had the superintendent had time to conduct a complete investigation the end results would have been essentially the same. I should like to emphasize, however, that the information contained in the data that was accumulated during the study is extremely detailed, probably much more so than could have been the case had the investigation been left to the superintendent.

Conclusion

I believe that the foregoing illustration shows that industrial engineering can be useful to the paper industry. I believe that there are many superintendents who have problems within their department which they have not the time to solve. I believe that, given someone with the time to work for them and someone capable of applying the necessary analytical techniques, many problems could now be solved which remain unsolved.

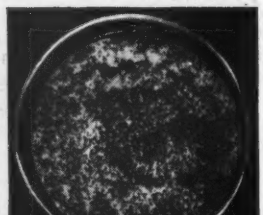
The important thing is still to remember that the industrial engineer is the servant of the superintendent in whose department he is working. As long as the industrial engineer is established in this manner within the organization his techniques can be of value to the pulp and paper industry.



plus...

or

minus



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122 E. 42nd ST., NEW YORK 17, N. Y. *Edited By* R. G. MACDONALD, *Secretary*

Nitration of Wood Pulp*

Influence of the Physical Condition of Pulp and of the Species of Wood

By Milton O. Schur[1] and Douglas H. McMurtrie[2]

Published In Two Parts — Part II.

(Continued from September 23 issue)

Advantages in the Use of Strong Caustic Soda in the Manufacture of Nitrating Pulp

It is apparent from the data given above that acid retention and rate of settling of beaten nitrocellulose were favorably changed when strong solutions of caustic soda at about room temperature were substituted for the hot dilute caustic ordinarily used to purify sulphite pulps. The improvement in acid retention gained through mercerization has already been reported for wood pulp paper in the preparation of nitrocellulose having a nitrogen content of about 11.3% and for unbeaten pulp shredded at various moisture contents, then nitrated to nitrogen contents of about 11% and 12%, respectively *(3)*. Improvement in acid retention through treatment of pulp with strong solutions of caustic soda at temperatures of about 0° to 10°C. has also been noted *(28)*.

The use of strong caustic at room temperature in the purification of pulp intended for nitration is worthy of further study. It is potentially of importance, whether chipped or flaked drier board is to be nitrated, or the Brown Company type of shred, and whether the pulp has been manufactured from spruce, balsam fir, western hemlock, or the pines.

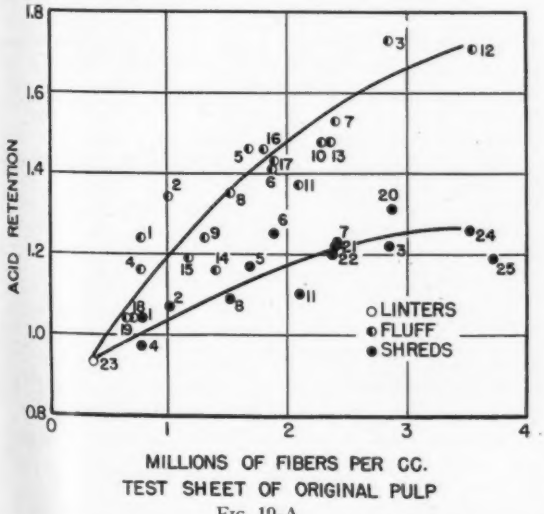

FIG. 19-A

Acid Retention as a Function of the Number of Fibers per c.c. of Test Sheet

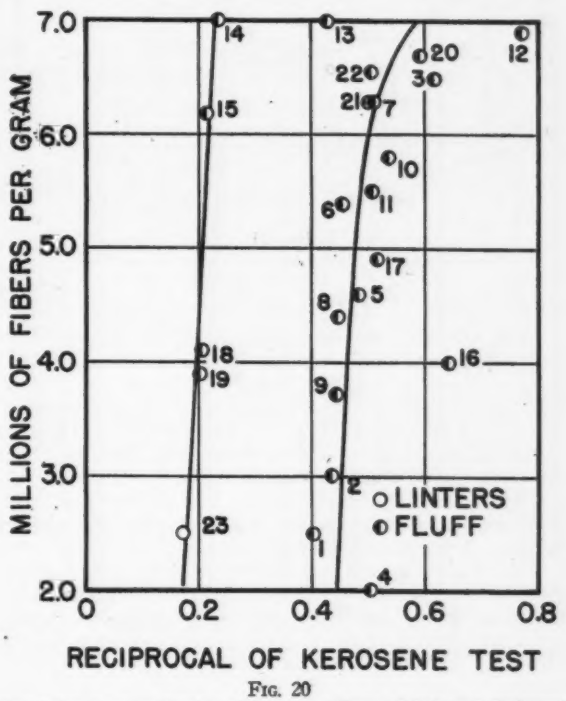

FIG. 20

Correlation between Number of Fibers per Gram of Pulp and Reciprocal of Kerosene Test

It is noteworthy that when the alpha cellulose content desired in the pulp is about, say, 91%, the yield of purified pulp is at least as good when strong caustic at room temperature is employed in the purification of pulps of sulphite origin as when weak caustic soda solution at elevated temperature is used. At higher alpha cellulose contents, above, say, 94%, strong caustic soda solution at room temperature will give the higher yield.

Whether strong solutions of caustic soda at room temperature are to be preferred in the pulp mill to weak solutions at elevated temperature will, of course, depend upon a number of factors, important among which are the type of wood available, the proximity of operations favorable to the recovery of caustic soda from wash liquors, and the cost of steam.

TABLE VI.—EFFECT OF VARIATION IN TIME OF CENTRIFUGING UPON ACID RETENTION

Time of Centrifuging, minutes	Acid Retention, (g. acid/g. Nitrocellulose)	
	Linters	Brown Co. Nitrating Pulp (Fluff)
0.5	1.07	1.84
1.0	0.89	1.70
2.0	0.77	1.60
3.0	0.78	1.52

Acid used: 26.0% HNO_3, 60.3% H_2SO_4, 13.7% H_2O.
Ratio wgt. acid to wgt. cellulose: 38 to 1.
Initial temp. 34° C.
Time of nitration: 22 minutes.

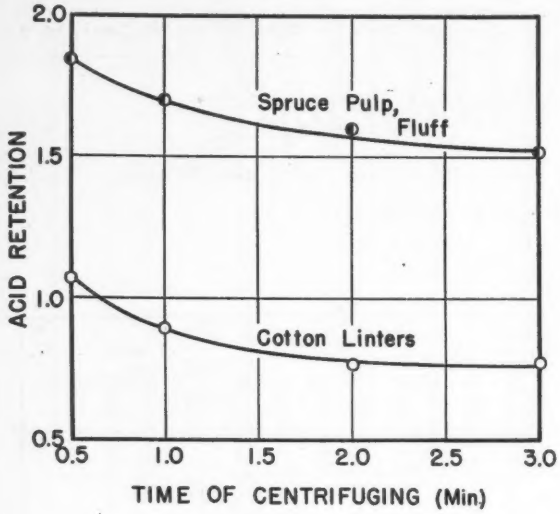

FIG. 21
Variation of Acid Retention with Time of Centrifuging

Conclusions

Data obtained in the examination of a variety of coniferous wood pulps indicate that the behavior of a pulp in the acid wringer and of the beaten nitrocellulose in the poacher can be predicted from a determination of the number of fibers per unit volume of test sheet prepared from the unbeaten, unnitrated pulp: the lower the number, the more suitable the pulp.

The beaten nitrocelluloses lend themselves more readily to dehydration in the press the lower the number of fibers per gram of unnitrated pulp.

Acid retention and rate of settling of beaten nitrocellulose are favorably affected if, in the purification of the wood pulp, sufficiently strong solutions of caustic soda are used to reduce the packing tendency of the fibers.

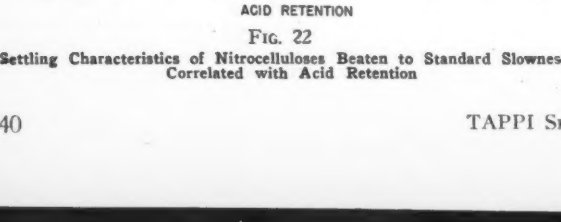

FIG. 22
Settling Characteristics of Nitrocelluloses Beaten to Standard Slowness Correlated with Acid Retention

Acknowledgment

F. A. Burningham prepared the camera lucida pictures of the fiber cross sections and determined the number of fibers per gram of the various pulps used in this study. R. E. Baker, E. G. Ingalls, and R. H. Ramsay cooked the various species of wood in the laboratory sulphite digesters; B. G. Hoos and T. M.

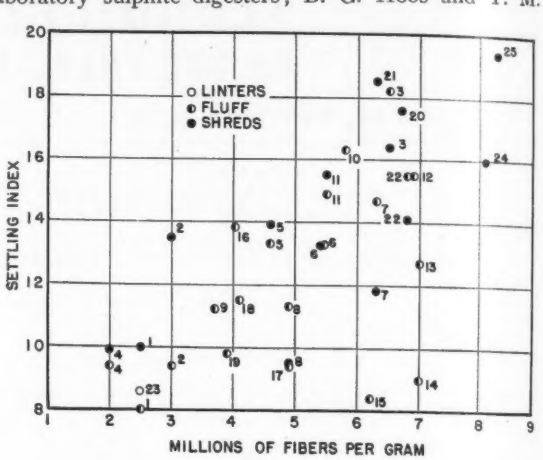

FIG. 23
Settling Index of Nitrocelluloses Beaten to Standard Slowness Plotted Against Number of Fibers per Gram of Pulp

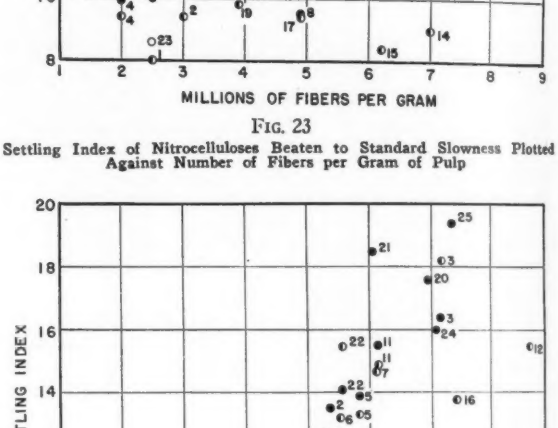

FIG. 24
Settling Index of Nitrocelluloses Beaten to Standard Slowness Plotted Against Reciprocal of Kerosene Test

FIG. 25
Settling Index as a Function of the Numbers of Fibers per Gram of Pulp Multiplied by the Reciprocal of the Kerosene Test

TABLE VII

Kind of Wood	Fast Growth Spruce	Slow Growth Spruce	Slash Pine
Age tree, years	26	150	20–35
Ave. ring width, mm.	5.0	0.5	4.6
Approx. dia. tracheids, mm.			
Springwood	0.023	0.030	0.045
Summerwood	0.019	0.020	0.032
Approx. cell-wall thickness, mm.			
Springwood	0.0012	0.0009	0.0040
Summerwood	0.0047	0.0038	0.0090

The age of the tree and average ring width were taken directly from the wood bolt.

The tracheid measurements were made on photomicrographs of cross-sections of the woods.

Brown purified and bleached the pulps; J. A. Magnusson, P. J. Robbins, and R. W. Thayer nitrated the pulps and determined the characteristics of the nitrocelluloses. A. R. Taylor designed the wetting tubs for the industrial nitrating plants and F. B. Olson supervised installation of the wet-shredding units in these plants. Acknowledgment is made also to Hercules Powder Company for cooperation in supplying samples.

Procedures

A. Pulp

1. Kerosene Absorption Test. The procedure is applied to commercial pulps in the form of drier board. In the case of laboratory-prepared pulps, the samples must be dried prior to the test, since the first drying step raises the test value substantially.

Reslush 4.75 grams of pulp (oven-dry basis) in 1000 ml. water for 3 minutes, using a high-speed agitator at 4000 r.p.m. The agitator is provided with two dull, rectangular blades of stainless steel, 1/16-inch thick, and 1.6 inch by 0.75 inch in size, with a ¼-inch V-notch in each narrow end. The blades are mounted at right angles to each other, perpendicular to the drive shaft.

Make a sheet of 5-inch diameter on a standard sheet machine, by first admitting water to cover the wire, then adding the pulp suspension and raking gently to stir the pulp. Allow the water to drain through the wire as rapidly as possible. Couch the sheet on a felt, and press between rigid metal plates for 60 seconds under a 2000-pound weight. Dry the sheet on a steam pipe of 6-inch diameter, at 100 pounds gage pressure, under a wire 10 inches wide, held in place by a 5-pound weight. Allow 8 minutes for drying. Cut a sample from the sheet measuring exactly 2 × 4 inches, and replace the sample on the steam pipe for 30 seconds to insure thorough drying. Place the sample in a tared, covered can and weigh to the nearest tenth of a gram. Then hold the sheet with tweezers above a small beaker and saturate with a measured amount of kerosene, applied from a burette. Add the kerosene drop by drop until the entire surface of the sheet glistens. Allow the sheet to drain into the beaker for 30 seconds and pour the excess kerosene back in to the burett.

Then compute the Kerosene Absorption Value as net milliliters of kerosene per gram of dry fiber.

2. Number of Fibers per Gram. Slush a known weight of pulp, approximately 0.2 gram, in a 1-liter volumetric flask about half full of water by means of gentle shaking until the fibers have been completely separated from one another, then add water to the mark. Carefully remove a 1.00 ml. aliquot and evaporate to dryness on a microscope slide having a polished, cup-shaped depression. In the case of pulps which show a marked tendency to clot, remove a 100 ml. aliquot and make up to 1 liter, from which remove several 1.00 ml. aliquots, each of which dry on similar microscope slides. In either case, evaporate a sufficient number of aliquots to deposit at least 200 fibers on the slides. Moisten the dried fibers with a dilute glycerine solution of safranine dye, using great care to lose no fibers. Count the fibers by removing them, one by one, to the flat portions of the slides. Convert the count to number of fibers per gram by applying the appropriate factor.

Count as fibers only particles of definite fibrous form as viewed at 10 to 12 x magnification.

(Duplicate tests should ordinarily check within 2%.)

3. Alpha Cellulose, Beta Cellulose, Ether-Soluble,

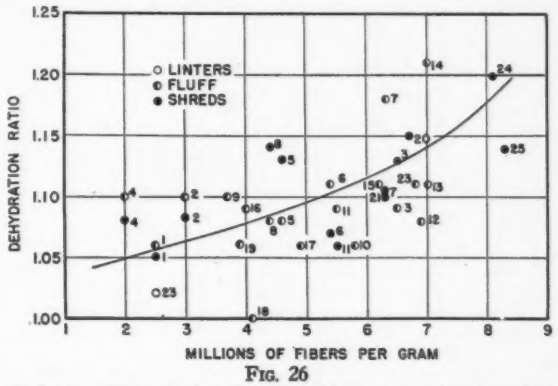

FIG. 26

Dehydration Characteristics of Nitrocelluloses as a Function of the Number of Fibers per Gram of Pulp

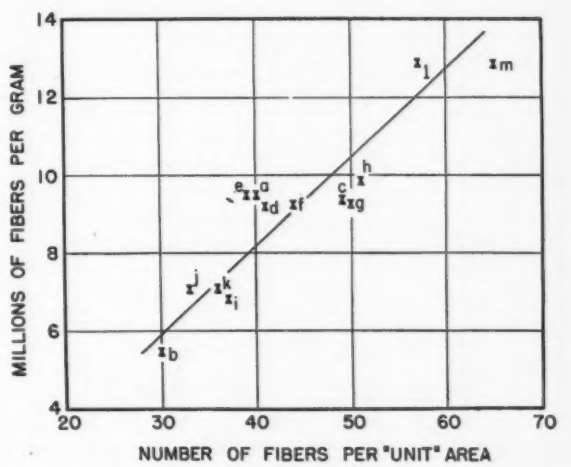

FIG. 27

Relationship between Number of Parallel Fibers per Unit Area and Number of Fibers per Gram of Pulp (See Table X)

TABLE VIII.—TYPICAL DATA ON LABORATORY COOKS

Kind of Wood	Seasoned White Pine	Green Norway Pine	Green Eastern Hemlock	Green Tamarack	Winn County (Me.) Spruce	Canadian Black Spruce	Green White Pine	Canadian Jack Pine
Date wood cut	1/19/42	3/17/43	3/10/43	3/10/43	Not known	Not known	3/10/43	Not known
Date wood pulped	2/26/43	3/22/43	3/17/43	3/16/43	1/26/43	2/20/43	3/13/43	2/20/43
Density of wood, (lbs. oven-dry/cu. ft. undried wood)	27.0	24.3	25.3	31.4	24.8	26.8	23.0	26.8
Number of annual rings	...	34	66	53	...	94	66	97
Rings per inch	12.1	8.5	24.4	14.0	29.4	22.9	11.4	22.0
Moisture content, %	28.6	59.8	52.4	40.6	17.7	36.0	56.3	38.0
Ether-soluble, %	1.35	2.73	0.52	...	...	1.32	5.22	5.40
Tests on unbleached pulp								
Pentosans	2.28	4.35	2.38	3.07	...	...	4.15	...
Lignin, %	3.42	0.99	0.81	0.87	...	...	3.20	...
Ether-soluble, %	2.4	4.7	0.83	1.47	0.71	0.97	3.71	1.45

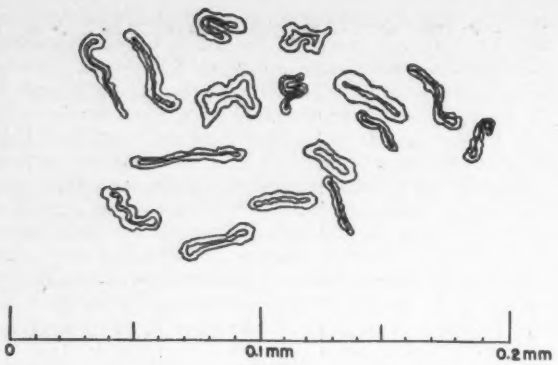

FIG. 30

Camera Lucida Drawing of Brown Company B Grade Nitration Pulp

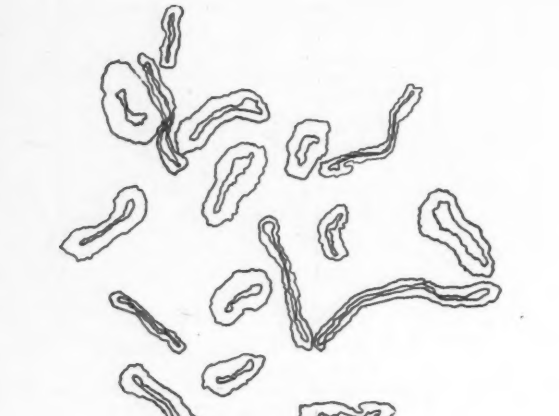

FIG. 31

Camera Lucida Drawing of Fernandina

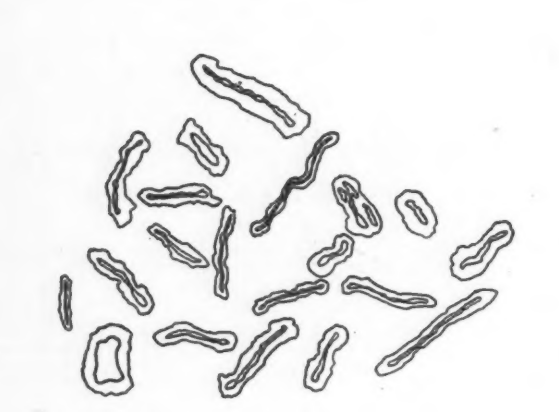

FIG. 32

Camera Lucida Drawing of Weyerhaeuser

Alkali Soluble (7.14% NaOH), Cuprammonium Viscosity. See Government Specifications PXS-543 (Rev. 2) May 9, 1941.

4. Water Retention. Fluff the dry pulp with a high speed shredder. Add 2.00 grams of the fluffed pulp, on an oven-dry basis, to 100 ml. water and stir with a glass rod. Line the laboratory centrifuge basket (used for the determination of acid retention) with fine nainsook, wet with water, bring the basket up to speed, quickly pour in the pulp suspension, and centrifuge for 60 seconds. Carefully remove the pulp from the nainsook and weigh.

B. NITROCELLULOSE

1. Ether-Alcohol Solubility

Method A (in range 1% to 98% solubility):

Apparatus and Reagents:

Bottles: wide-mouth, ground-glass-stoppered bottles of 250 ml. capacity.

Tumbling wheel: arranged to mount bottles radially, and rotate them at about 5 r.p.m. In the lower fifth of the path, bottles are dipped in a water bath maintained at 15.5°C. ±1°.

Babcock type centrifuge: hand operated, with two 50 ml. tubes.

Miscellaneous: graduate 100 ml.; tared beakers 100 ml.; hot water bath; drying oven, arranged with air circulation at 48°C.; analytical balance.

Ethyl ether.

Ethyl alcohol: 95% by volume, denatured according to Formula 2B (containing 0.5% benzene by volume).

Procedure:

Dry the sample of nitrocellulose at least 15 hours in oven at 48 to 50°C. with air circulation. Weigh out a 4.00 gram portion and place in glass-stoppered 250 ml. bottle. Add 56 ml. alcohol (at 15.5°C.) to the sample, stopper the bottle, and shake to wet the nitrocellulose thoroughly. Then add 112 ml. of ether (at 15.5°C.) with moderate shaking, strap the bottle in position on the tumbling wheel by means of a broad rubber band (cut from inner tube) in such a way that the stopper is held firmly in place. Rotate the bottle through the water bath at 15.5°C. for at least 3 hours.

Then rapidly pour 40 ml. of solution from the bottle into each of two 50 ml. Babcock tubes. Stopper the tubes at once and centrifuge 3 minutes. Rapidly transfer 35 ml. of the clarified solution from each tube to a graduate, thence to a 100 ml. tared beaker. Cover with a watch glass and place in a water bath at about 95°C. When the volume of solution is reduced to about 5 or 10 ml., uncover the beaker, place on a piece of asbestos board resting on top of the water bath, and evaporate the solution to dryness. Cool the beaker in a desiccator, weigh, reheat and dry to constant weight.

Method B (in range of 98 to 100% solubility)

Apparatus and Reagents:

TABLE IX

Data taken from Graff, *Paper Trade Journal*, Vol. 111, No. 9: 76-79 (August 29, 1940)

Item	Number of Fibers per Unit Area *	Number of Fibers per Gram
(a) Softwood unbleached jack pine kraft	40	9.53×10^6
(b) Softwood unbleached southern kraft	30	5.50
(c) Softwood Duracel (Brown Co.)....	49	9.38
(d) Softwood Cellate (Brown Co.)....	41	9.23
(e) Softwood European unbleached kraft	39	9.53
(f) Softwood European bleached kraft.	44	9.23
(g) Softwood unbleached Mitscherlich..	50	9.25
(h) Softwood bleached sulphite.....	51	9.88
(i) Softwood unbleached western sulphite	35	6.80
(j) Softwood bleached western sulphite	33	7.05
(k) Softwood bleached western sulphite	36	7.05
(l) Softwood Regular Alpha (Brown Co.)	57	12.85
(m) Softwood NN Alpha (Brown Co.)	65	12.85

* Cross-sections stacked like cordwood.

FIG. 33

Camera Lucida Drawing of Fast-Growth Eastern Spruce Pulp Cook #2271

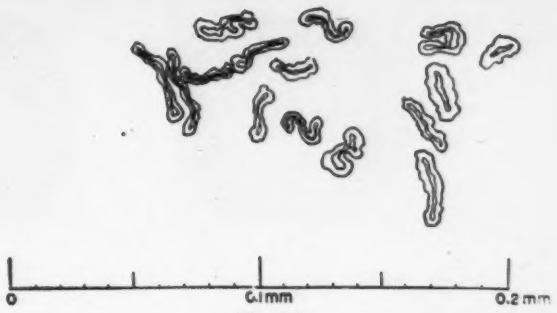

FIG. 34

Camera Lucida Drawing of Slow-Growth Eastern Spruce Pulp Cook #2270

As in Method A, except that the bottles have a capacity of 500 ml., are wide mouth, and are provided with ground glass stoppers, and that a Gooch crucible and suction flask are used in place of centrifuge and beaker.

Procedure:

Weigh out a 1.000 gram sample of the nitrocellulose previously dried in an air-oven at 48°C. Place in a 500-ml. bottle. Add 100 ml. alcohol (at 15.5°C.), stopper the bottle and shake well. Then add 200 ml. of ether (at 15.5°C.) with moderate shaking, place in the water bath at 15.5°C. for 24 hours, and shake occasionally.

Filter with the aid of suction through a Gooch crucible containing a mat of asbestos. Wash the residue with a 2:1 mixture of ether and alcohol, suck dry, dry in air, then to constant weight at 105°C., cool in a desiccator and weigh.

Results can be reproduced within about 0.15%. The method applies to samples which are substantially free from ash.

If a sample is known to contain an appreciable amount of ash, ignite the residue on the asbestos mat, cool, and reweigh. Express the loss in weight as nitrocellulose insoluble in ether-alcohol.

2. Water-Slowness of Beaten Nitrocellulose.

Definition: the time in seconds for a definite height of liquid in a vertical tube containing a water suspension of nitrocellulose at standard temperature to drain through a fine screen of specified characteristics.

Apparatus:

Glass tube: 1.60 cm. inside diameter by 45 cm. long, provided with two marks 25.4 cm. apart, of which the upper mark corresponds to a volume of 75 ml. in the lower end of the tube.

Silk bolting cloth: thread count of 56 by 56 per cm.

Soft rubber stopper: about 5 cm. diameter.

Shallow glass tray, e.g., 15 × 25 cm.

Miscellaneous: beakers, graduates, stopwatch, etc.

Procedure:

Weigh out the equivalent of 0.250 gram of dry nitrocellulose and make up a suspension with distilled water at 25°C. to a total volume of 75 ml.

Cover the lower end of the glass tube with silk bolting cloth held in place by a rubber band. Support the tube vertically and seal the lower end by pressing it into the soft rubber stopper which is placed in the tray. Then pour in the water suspension of nitrocellulose which fills the tube to the upper mark.

Lift the tube off the stopper quickly, supporting it vertically, and note the time in seconds for the liquid level to fall through a height of 25.4 cm. to the lower mark.

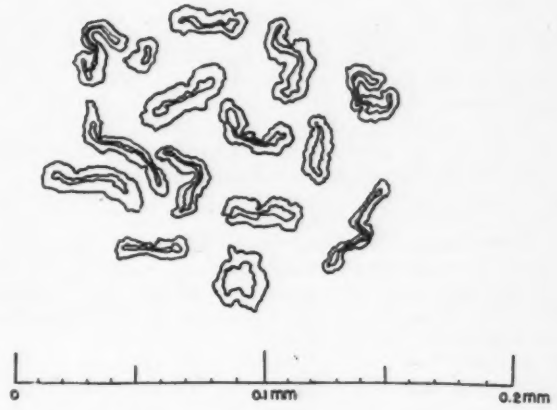

FIG. 35

Camera Lucida Drawing of White Pine, Cook #2560

FIG. 36

Camera Lucida Drawing of Slash Pine, Cook #2246

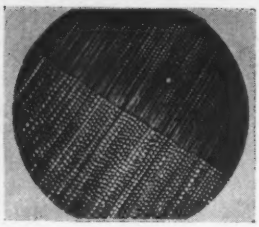

FIG. 37
Fast-growth Northern Spruce Wood 60X

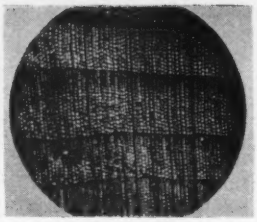

FIG. 38
Slow-growth Northern Spruce 60X

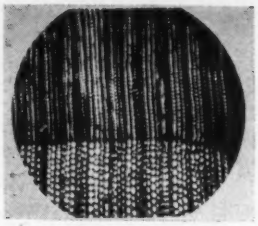

FIG. 39
Southern Slash Pine 60X

3. Settling Index, Beaten Nitrocellulose.

Apparatus:

Graduates: several 50 ml., with an inside diameter 0.85 to 0.87 inches and a height to the 50 ml. mark of 5.0 to 5.1 inches.

Procedure:

Transfer a 1.00 gram sample (on an oven-dry basis) of the water-wet nitrocellulose, which has been centrifuged but not allowed to dry out, to one of the graduates.

If the sample is relatively free, add 18 to 20 ml. of water, then stir with a glass rod to break up clots. Add water to the 25 ml. mark, stir again until the fibers are uniformly distributed, let settle 60 minutes, and read the volume of settled nitrocellulose.

If the sample is of medium slowness or is relatively slow, add only 10 to 15 ml. of water to the graduate at the outset, otherwise proceed as above. (The smaller quantity of water in the first addition facilitates the breaking up of the fiber clots.)

4. Dehydration Ratio of Beaten Nitrocellulose.

Definition: this characteristic is the ratio of the "dehydration value," determined in the laboratory on a given sample of nitrocellulose, to the value similarly determined on a standard sample of commercial nitrocellulose made from cotton linters.

The "dehydration value" is the ratio of alcohol to dry nitrocellulose at the end point of a semimicro testing procedure simulating plant practice. The value is based on a sample of nitrocellulose which has been beaten to a definite water-slowness of 10 seconds.

Definition of plant practice: The dehydrating press is filled with water-wet pulped nitrocellulose containing about 0.5 part water per unit weight of dry nitrocellulose. A low-pressure squeeze is applied to force out as much water as possible through a screen. About 1.4 parts of 2-B alcohol per unit weight of dry nitrocellulose are pumped in, during an interval of about 1 minute. Then a high-pressure squeeze is applied to reduce the slightly diluted alcohol to about 19% based on the total wet cake, and the latter is removed from the press. The total normal time of cycle is 3 to 3.5 minutes.

Apparatus for Laboratory Procedure:

Dead-weight press: equipped with a 600-pound weight.

Glass tube: 1.68 cm. inside diameter by 2.50 cm. height.

Cardboard: 5 cm. square.

Medium hard felt: 5 cm. squares about 0.4 cm. thick.

Percale: 5 cm. squares.

Glass tamping rod: to fit within the glass tube.

Rigid metal plates: 12.7 cm. diameter.

Analytical balance, etc.

Procedure:

The nitrocellulose used for the test is a beaten sample of known water-slowness value at or adjacent to 10 seconds.

Weigh to the nearest milligram an assembly consisting of the glass tube placed vertically on a square of percale, which in turn rests on a square of felt and in turn on a square of cardboard. Then weigh into the glass tube a calculated amount of water-wet nitrocellulose containing 0.250 gram of dry nitrocellulose. Place the glass tamping rod in the tube and subject the nitrocellulose to a slight pressure. Add 0.43 ml. of 2-B alcohol, corresponding to a weight of 0.35 gram, or 1.4 parts per unit weight of dry nitrocellulose, from a finely graduated pipette, and start the timer. The normal temperature of operation is 25°C.

Press the sample with the tamp, and gradually increase the pressure to compress the plug to a thickness of about 1 cm. Then raise the tube slightly and force the plug out on the percale. Place another square of percale on top of the plug and cover in turn with a square of felt. Remove the assembly consisting of the plug surrounded on top and bottom by layers of percale and felt from the cardboard and place between metal plates. Put it under the dead weight press and apply pressure in such a way that the time interval between the first addition of alcohol and the application of high pressure is 60 seconds.

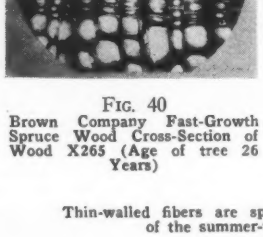

FIG. 40
Brown Company Fast-Growth Spruce Wood Cross-Section of Wood X265 (Age of tree 26 Years)

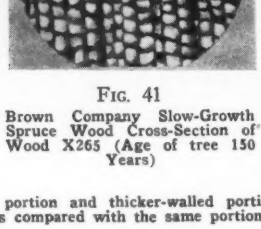

FIG. 41
Brown Company Slow-Growth Spruce Wood Cross-Section of Wood X265 (Age of tree 150 Years)

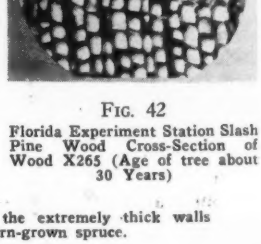

FIG. 42
Florida Experiment Station Slash Pine Wood Cross-Section of Wood X265 (Age of tree about 30 Years)

Thin-walled fibers are springwood portion and thicker-walled portion. Note the extremely thick walls of the summer-wood fibers compared with the same portion of northern-grown spruce.

Apply the high pressure of 600 pounds dead weight, corresponding to 1740 p.s.i. to the plug for 30 seconds.

At the end of this time, remove the plug of nitrocellulose from the percale, drop into a tared weighing bottle, and quickly weigh to the nearest milligram.

Then place it between fresh layers of percale and felt and press between metal plates for a further interval of 30 seconds, or a total high-pressure application of 60 seconds. Remove the plug from the percale and reweigh as before.

Check the weight of dry nitrocellulose by drying the plug overnight in an oven provided with circulating air at 48°C., and reweighing, in a weighing bottle, to the nearest tenth of a milligram.

Inspect the weight of the plug after application of high pressure for 30 seconds to check the normality of the operation. The reason for applying fresh percale and felt before the second stage of high pressure is to provide a fresh absorbent medium to take up the alcohol squeezed from the sample plug.

Calculate ratio of alcohol to dry nitrocellulose after application of high pressure for 60 seconds and tabulate the water-slowness of the sample.

Beat a second portion of the same original lot of nitrocellulose to a different degree of water-slowness, adjacent to 10 seconds, and test for dehydration as above.

From the data on the two portions of nitrocellulose, calculate the dehydration value at a degree of beating equal to 10 seconds water-slowness on the assumption of a straight-line relationship between dehydration value and slowness over the narrow range of slowness involved. (value A)

In a similar way, determine the dehydration value of commercial linters nitrocellulose (value B).

Calculate the dehydration ratio of sample A by dividing value A by value B.

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TAPPI Pittsburgh Testing Conference

The first general testing conference of the Technical Association will be held at the Mellon Institute, Pittsburgh, Pa. on October 11-14, 1948. Housing for those attending the meeting will be provided by the William Penn Hotel, Pittsburgh, Pa.

The meeting will be devoted to the consideration of a number of proposed new methods and revisions that are controversial in nature and require thorough round-table discussion prior to further advancement.

From time to time individual testing standards of the Association have been criticized. At present a questionnaire is in the hands of all members. The responses should indicate methods that are not serving their intended purpose and can be revised. Members planning to attend should be prepared to make suggestions in regard to the revision of existing methods and provide substantiating data.

Following is the tentative program:

Monday, October 11, 1948

9:00 A. M. "The Role of Testing on the Progress of the Industry", by James d'A. Clark, general chairman, TAPPI Testing Division. "The Use of Statistical Methods in Connection with Specific Testing Problems". (Note: This will be a group of presentations by members of the TAPPI Statistics Committee, T. A. Pascoe, Nekoosa-Edwards Paper Company, Chairman).

"The Use of Statistical Methods in Determining Product Specifications" by Charles Bicking, Hercules Powder Co., Wilmington, Delaware.

12:30 P. M. Luncheon (Webster Hall).

2:00 P. M. Chemical Methods, Milton Fillius, Eastman Kodak Company, Chairman.

1. Disperse Viscosity—Leader of discussion—Dr. Peter Vanwyck.

A—Introduction of Topic by Dr. Vanwyck

He will point out that the discussion is to be limited to a method for the average viscosity (and, therefore, average molecular weight) and will not involve a discussion of methods for molecular weight distribution. He will outline and describe briefly the methods to be discussed which will be:

a—The two modifications of the cupriethylene diamine method T-230.

b—The fast and slow cuprammonium methods T-206.

B—Discussion period—the comments of chemists handling different types of cellulose will be valuable, so that the most nearly universally applicable procedure will be selected.

2. Alpha-Cellulose Methods: Leader of discussion—Dr. A. S. O'Brien.

A—Introduction of Topic by Dr. O'Brien.

He will outline briefly a proposed new TAPPI method and single out three points on which discussion should center.

a—A method of sample preparation to replace grinding a small amount of new data obtained this summer will be presented.

b—The important question of whether the mercerization solution (17.5% NaOH) should be diluted to some value of approximately 8% prior to filtering, or whether the alpha residue should

be filtered directly from the 17.5% NaOH.
c—Should a vacuum oven be used in place of a regular oven for determination of moisture, and for weighing the alpha-cellulose residue.

B—Discussion period—the discussion will be held largely to the above three points. It is suggested that those who plan to enter the discussion read the recent article in the August 5, 1948, issue of the Paper Trade Journal on "Statistical Study of the Variables of Alpha-Cellulose Methods".

3. The pH of Paper Extracts T-435—the leader has not been definitely selected.

A—Introduction: A brief account of the Hot and Cold extraction procedures will be given a little new data from Dr. H. Launer of the Bureau of Standards.

B—Discussion: The discussion will be aimed at a decision to select either the hot or the cold extraction methods, or a realization that each type of extraction may have its place in paper testing.

2:00 P. M. Structural Fibrous Materials, John F. Campbell, Flintkote Company Chairman.
Discussion of Testing Methods, led by Wayne Lewis, Forest Products Laboratory.

Tuesday, October 12, 1948

9:00 A. M. Microscopy, Thomas Fyfe, Eastman Kodak Company Chairman.

1. Revision of T-401, Fiber Composition of Paper. Mr. Fyfe has prepared a revision with the objective of making it as straightforward as possible in its application and to clear up all statements and phrases that might leave the fiber analyst in doubt. Color photomicrographs of "C" stained softwood fibers will be shown.

9:00 A. M. Packaging Materials Testing, George R. Sears, Institute of Paper Chemistry, Chairman.

1. Water Vapor Permeability at 0°F.
2. Flavor Transfer.
3. Points of Gas Leakage.
4. Temperature and Humidity Cycling.

12:30 P. M. Luncheon (Webster Hall).

2:00 P. M. Packaging Materials Testing. (Continued).

5. Heat Sealability.
6. Pressure Sensitive Tapes.
7. Adhesiveness of Seals.
8. Blocking Resistance.

2:00 P. M. Optical Properties, A. E. Croup, Hammermill Paper Company, Chairman.

1. Measurement of Gloss. Discussion led by R. S. Hunter, Gardner Laboratories.
2. Lamp for Fading Test.
3. Questionnaire on Fading. General Discussion.
4. Brightness Test for Clays, Talc, etc.

2:00 P. M. Structural Fibrous Materials.
Meeting of the Committee and Subcommittees.

Wednesday, October 13, 1948

9:00 A. M. Pulp Testing, L. V. Forman, Institute of Paper Chemistry, Chairman.

1. Dirt in Pulp.
2. Classification and Fiber Length.
3. Zero-Span Tensile Test.
4. Couching and Pressing (Revision T 205).
5. Consistency of Pulps (High and Low).
6. Shives.

9:00 A. M. Nonfibrous Materials Testing, Stephen Kukolich, Lee Paper Company, Chairman.

1. Analysis of Paraffins and Petrolatums.
Note: This session to be held jointly with the Packaging Materials Testing Committee.

(1) Sealing and Laminating Strength—A. Kinsel, Daugherty Refinery, Petrolia, Pa.

(2) Melting Point Distribution—T. H. Rogers, Standard Oil Co., of Indiana, Whiting, Indiana.

(3) Oil Content—J. E. Newman, Esso Standard Oil Company, New York, N. Y.

(4) Color—J. E. Newman, Esso Standard Oil Co., New York, N. Y.

(5) Penetration Test of Microcrystalline Wax—E. R. Wiles, Bareco Oil Co., Barnsdall, Oklahoma,

(6) Low Temperature Flexibility—G. Rumberger, Marathon Corp., Menasha, Wis.

(7) The Stability of Paraffin, Microcrystalline Waxes and Petrolatum with Reference to Odor Development and Color Change—Representative of The Marathon Corp., Menasha, Wisconsin.

(8) Tensile Strength—J. W. Padgett, Moore & Munger, New York, N. Y.

(9) Blocking Resistance—Representative of Kalamazoo Veg. Parchment Co.

12:30 P. M. Luncheon (Webster Hall).

2:00 P. M. Nonfibrous Materials Testing. (Continued).

2. Analysis of Rosin Size and Resin-Wax Sizes. Discussion led by R. T. Mashburn. Hercules Powder Company.
3. Analysis of Fillers (Revision of T 615 m). Discussion led by W. A. Kirkpatrick, Allied Paper Mills.
4. Analysis of Beater Starch. Discussion led by M. R. Wilkens.
5. Silicate of Soda.

2:00 P. M. Committee Meetings.
This afternoon is held open to accommodate any committees that may wish to continue their discussions. These meetings will be announced.

Thursday, October 14, 1948

8:00 A. M. Visit to Plant of Columbia Alkali Division, Pittsburgh Plate Glass Company, Natrium, W. Va.
Note: Because of limitations of qualified guides and dining facilities this trip will be limited to 100 employees of pulp and paper mills. Buses will leave the William Penn Hotel at 8:00 A. M. and return at 6:30 P. M.
An opportunity is presented to see one of the most recently constructed and modern plants of this type in the United States. The daily capacity is about 250 tons of chlorine requiring 35,000 kw of power, most of which is generated at the site. Salt brine is obtained from one of the deepest known wells, 6,800 feet. Up to 100 million gallons of water is pumped daily. Improved Columbia-Hooker cells are used. The Columbia purification process for diaphragm electrolytic caustic soda, a modern chemical laboratory, an automatic intermittent chlorinator of industrial water for algae control, and the beginning of the manufacture of chlorinated organic chemicals are some of the interesting things to be seen.